

Vol. LVI.
New Series Vol. 9, No. 2.

NOVEMBER, 1919.

\$3.00 per annum
Foreign, \$3.60; Canada, \$3.25
Single Copies 30 cts. in U. S.

JOURNAL OF THE American Veterinary Medical Association

FORMERLY
AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n)

EDITED AND PUBLISHED FOR
The American Veterinary Medical Association
by W. H. Dalrymple, Baton Rouge, La.

V. A. MOORE, President, Ithaca, N. Y. N. S. MAYO, Secretary, Chicago.
M. JACOB, Treasurer, Knoxville, Tenn.

Executive Board

GEO. HILTON, 1st District; T. E. MUNCE, 2nd District; S. E. BENNETT, 3rd District; J. R. MOHLER, 4th District; C. H. STANGE, 5th District; R. A. ARCHIBALD, 6th District; A. T. KINSLEY, Member at Large.

Sub-Committee on Journal

J. R. MOHLER GEO. HILTON R. A. ARCHIBALD

CONTENTS

EDITORIAL	119
PAPERS, ETC.:	
How to Raise Standards in Veterinary Education—WM. N. BERG	125
Differential Features Between Melanosis and Melanosarcoma—S. A. GOLDBERG	140
The Veterinarian and The County Agent—DEAN COOPER	153
Typhlitis and Perityphlitis—OSCAR SCHRECK	158
Inspections for Interstate Movement of Live Stock—J. S. GROVE	164
Studies on Anthelmintics—M. C. HALL AND M. WIGDOR	169
Relative Potency of Tail-Bled and Carotid-Bled Anti-Hog Cholera Serum—E. A. CAHILL	177
Special Report on the Histo-Pathology of Glanders (Illustrations)—CAPT. HADLEIGH MARSH	186
CLINICAL AND CASE REPORTS:	
Enuresis—OSCAR SCHRECK	188
An Interesting Case—W. M. BURSON	188
A Study of Fecal Examinations of 1,000 Imported Dogs—MEYER WIGDOR	189
A Case of Spindle-Celled Sarcoma of the Skin and Subcutaneous Tissues—B. F. KAUPP	191
Investigation of the Death of Chicks: Coecidian Hepatitis—B. F. KAUPP	194
ABSTRACTS	196
ARMY VETERINARY SERVICE	200
ASSOCIATION NEWS:	
American Veterinary Medical Association:	
Fifty-sixth Annual of the A. V. M. A.	203
Officers and Committees, 1918-1919	204
Program	206
Ladies Auxiliary	211
Hotel Rates	211
Medical Delegates to the A. V. M. A.	212
Other Associations	213
NECROLOGICAL	228
MISCELLANEOUS	230

THE JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION is issued the first of each month. Manuscripts and copy for insertion should be as nearly perfect as possible for the printer and should be received by the tenth of the preceding month to insure insertion in the next month's issue. Volumes begin in April and October.

Communications relating to publication, subscriptions, advertisements and remittances should be addressed to JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, Baton Rouge, La. Matters pertaining to the American Veterinary Medical Association and Membership should be sent to Dr. N. S. Mayo, Secretary, 4753 Ravenswood Avenue, Chicago, Ill.

Entered as Second Class Matter, October 26, 1918, at Baton Rouge, La., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Sec. 1103, Act of October 3, 1917; authorized October 26, 1918.

For Blackleg

VETERINARIANS have their choice of three powerful immunizing agents against blackleg.

BLACKLEG VACCINE (BLACKLEGODIDS)

Blacklegoids is a pill-shaped vaccine prepared from attenuated blackleg organisms.

BLACKLEG FILTRATE (GERM-FREE VACCINE)

Blackleg Filtrate is prepared from the cultural filtrate of blackleg organisms.

BLACKLEG AGGRESSIN (GERM-FREE VACCINE)

Blackleg Aggressin is prepared from the infected tissues of animals that have succumbed to blackleg.

* * *

These vaccines are subjected to exhaustive bacteriologic and physiologic tests before they are placed on the market. Veterinarians may administer them with confidence in their purity and activity.

WRITE FOR FULL DESCRIPTIVE LITERATURE.

Parke, Davis & Company

DETROIT

GOOD VETERINARIANS ALL OVER THE COUNTRY USE PURITY BIOLOGICS

BLACKLEG AGGRESSIN (Germ-Free Liquid Vaccine): Over a million and a half calves have been immunized for life against Blackleg with one treatment. Owing to the increased demand we are able to quote you a

REDUCED PRICE OF SIXTEEN CENTS PER DOSE.

HEMORRHAGIC SEPTICEMIA VACCINES for cattle and sheep prevent this disease and reduce losses in infected herds. Price, 10 cents per dose of 4 cc.; 7½ cents for orders of 500 doses or more.

MIXED VACCINE FOR SWINE prevents Hemorrhagic Septicemia or Swine Plague, prevents losses from mixed infections. When used with Anti-Hog Cholera Serum stops "breaks" and saves revaccination. Price, 10 cents per dose of 4 cc.; 7½ cents for orders of 500 doses or more.

PURITY ANTI-HOG CHOLERA SERUM — high in potency. Price is reasonable.

WANTED: Agents to represent us in all unoccupied territory.



ALL PRODUCTS MADE UNDER U. S. VETERINARY LICENSE NO. 38

Send for
booklet

{ "Blackleg and its Prevention."
"Hog Cholera and Its Prevention."
"Hemorrhagic Septicemia and Its Prevention."

**PURITY BIOLOGICAL LABORATORIES,
SIOUX CITY, IOWA**

Purity Serum Company of Texas, Ft. Worth, Texas





JOURNAL
OF THE
American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n)

W. H. DALRYMPLE, Editor.

BATON ROUGE, LA.

V. A. MOORE, President, Ithaca, N. Y. N. S. MAYO, Secretary, Chicago.
M. JACOB Treasurer, Knoxville, Tenn.

Executive Board

GEO. HILTON, 1st District; T. E. MUNCE, 2nd District; S. E. BENNETT, 3rd
District; J. R. MOHLER, 4th District; C. H. STANGE, 5th District; R. A.
ARCHIBALD, 6th District; A. T. KINSLEY, Member at Large.

Sub-Committee on Journal

J. R. MOHLER GEO. HILTON R. A. ARCHIBALD

The American Veterinary Medical Association is not responsible for views or statements published in the JOURNAL, outside of its own authorized actions.
Reprints should be ordered in advance. A circular of prices will be sent upon application.

VOL. LVI, N. S. VOL. 9

NOVEMBER, 1919

No. 2

DR. SIMON F. TOLMIE, M. P.

It is always a source of very great pleasure to those who are endeavoring to raise the status of the profession when one of its members receives due recognition at the hands of the public, and especially of the government of the country to which he belongs. Dr. Simon Fraser Tolmie, of Victoria, British Columbia, a worthy member of the American Veterinary Medical Association, and who represents the City of Victoria in the Canadian House of Commons, has recently been appointed Minister of Agriculture for the Dominion of Canada, which, we understand, is the first time a veterinarian has occupied a Cabinet position in the Dominion. Dr. Tolmie's appointment to the portfolio of agriculture has met with general approbation throughout the Dominion, and his many friends south of the international boundary will join with Canadian agriculturists and veterinarians in hearty congratulations.

Through our Canadian confrere, Dr. J. G. Rutherford, we are informed that the recipient of this honor has long been associated with the leading organizations working for the advancement of the live stock industry in Canada and the improvement of the veterinary profession. In these two fields of effort

he has made many intimate friends all over America who will view his appointment as a well-merited promotion, and an opportunity for him to still further assist and guide the agricultural industry. As chief Inspector for the Health of Animals Branch in British Columbia, and as President of the British Columbia Veterinary Association, Dr. Tolmie has been in close touch with farming and with live stock needs from a health point of view. However, he has served in an even larger field, for at the time of his appointment he was President of the Western Canada Live Stock Union, the Canadian National Live Stock Council, and the Holstein-Friesian Association of Canada.

Dr. Tolmie's efforts in a public way, combined with actual farm experience, he being owner of "Braefoot Farm," near Victoria, B. C., where he makes his home, should equip him admirably for the task in hand. In fact it is stated that no Minister has accepted a Dominion portfolio with a broader knowledge of the industry.

Dr. Tolmie is a comparatively young man, being born, of British parentage, at Victoria, B. C., January 25 1867; he was educated at the Victoria High School; and received his degree in veterinary medicine and surgery from the Ontario Veterinary College.

It is distinctly refreshing to be able to record such splendid recognition of one of our members, which ought to aid in enlightening the public as to the worthiness of the profession to occupy exalted positions connected with governmental affairs.

THE JOURNAL desires to extend to Dr. Tolmie its heartiest congratulations and best wishes in his new sphere of usefulness, which it feels sure will result beneficially to the agriculture of Canada and to the veterinary profession, of which he is an honored member.

So far as we know, Dr. Tolmie is the first member of the veterinary profession to hold a Cabinet position, not only in Canada, but in any country.

UNFORTUNATE.

The following is a quotation from an editorial which appeared in *The Shorthorn World*, of August 25th:

"There are many able and straightforward veterinarians, but, unfortunately, there are also very many

who should not have a license to practice. The hardest fight that stockmen have at present is not with 'T. B.,' but with incompetent, irresponsible and vicious 'vets.' The various breed associations owe it to themselves and their membership to get in close coöperation with federal and state authorities to the end that the brood of ignorant and domineering members of the worthy profession may be curbed in their propensity to prey upon an industry that is at the very foundation of the country's prosperity."

There are always two sides to a question, and we are not familiar with the individual details which brought forth the above arraignment, although, from another part of the same editorial, it was evidently in connection with tuberculin testing in the accredited herd work. It is unfortunate, however, if some members of the profession should merit such severe criticism; and also unfortunate that the criticism should gain such publicity through the pages of an important breed publication, as it is sure to reflect, more or less, on the profession as a whole, although the editor evidently did not mean it that way, as he further states, that, "there is no country where there is a larger proportion of absolutely able and unbuyable veterinarians."

We are unable to discuss the merits or demerits of the instance, or instances, alluded to in the editorial cited, as we do not have the facts before us. However, we are not living in millennial days, of course, and until that time arrives, it is useless to expect perfection, ethically speaking, even among members of the veterinary profession, and which we have no doubt applies to other professions. Human nature is the same the world over, and the proverbial black sheep is to be found in every flock; and while this is unfortunate, it, nevertheless, seems to be true. However, the "shady act" will generally gain much wider publicity than that which is creditable. The former is often seized upon by the press as "good stuff," and classed as "sensational;" while the good that a man does is frequently passed over without comment because it is expected of him. Hence the good work accomplished by many members in trying to raise the standard of the profession in the eyes of the public may be more than counterbalanced by the unprofessional act of a single member.

We have just referred, in our previous article, to the splendid recognition given the veterinary profession through the promo-

tion of one of our members in the person of Dr. Tolmie, and the tendency it will have in elevating its status. Still the standing of the profession should not have to depend upon special promotion, such as Dr. Tolmie has received, but every member, no matter how obscure his position in life may be, is capable, if he will, of doing his little "push" in the upward direction.

As to the facts which called forth the editorial alluded to, we repeat, we are not informed; there may be discrepancies on both sides. At the same time it is unfortunate if any members of the profession are to be found whose acts are sufficient to call forth such an arraignment of them as that given in the issue of *The Shorthorn World* referred to. It is one of the most potent means of staying the progress that is so much to be desired. It should be remembered that it is the man who makes his profession, rather than the profession that makes the man.

THE LAST APPEAL.

The events of the previous meetings of the A. V. M. A. have, each time, been heralded with unusual enthusiasm, with the hope that each anniversary might prove its superiority over all preceding ones. This spirit of progression is human nature and, did we not proudly possess it, we might still be depending altogether on good fortune to cure the ills of man and beast.

This year the Association is stronger and more zealous than ever before in its history, to develop the welfare of the profession on a basis of equity to all. This is evidenced through the increased membership within the last two years. Veterinarians who are ambitious to succeed on merit have commenced to recognize the strict necessity of a systematic, harmonious organization built upon great democratic principles, sound and safe, for the profession and its clientele. Every veterinarian, whether he be employed in practice, public service, educationally, or commercially, should cultivate the principles, which became so deeply inculcated into the minds of the designers of the Declaration of Independence; notably, for a new nation, born for the common good of all, likewise a greater A. V. M. A. for the mutual good of every member, but not forgetful of the underlying fundamental doctrine, that we can only prosper and expand in proportion to our usefulness to the cause to which we are devoted.

When we think back to June, 1863, and use our vivid imaginations to compare what was available to call upon for the first meeting of our Association, it is almost beyond our comprehension to realize the advancement which has since been made. It is all the result of a higher standard—quality, quantity, equipment and knowledge, properly utilized to serve a definite purpose. Our purpose is to be as resourceful as possible, but unless we frequently meet together to exchange ideas and discuss our problems from a national standpoint, we, as individuals, are liable to suffer mental atrophy and become so eccentric and self devoted as to be unable to appreciate how our brothers live. Often one imagines he is suffering unusual adversity, but such illusions are apt to sink into utter insignificance when measured up alongside the difficulties entertained by the other fellow.

This fall, November 17-21st, will be an opportunity, *par excellence*, to promote a kindlier feeling of brotherly love and develop the Association beyond our fondest hopes. Every member of the A. V. M. A. is a stockholder in THE JOURNAL and its equipment, and should feel that he is an important unit toward contributing useful matter for each month's publication. THE JOURNAL is the official organ of the Association, owned and controlled accordingly, and we should make a special effort to see that it reaches the office of every veterinarian in the United States, Canada, and as many as possible abroad. The policy of THE JOURNAL must be kept up to its usual high standard, absolutely impartial, open for the dissemination of the best reliable, authentic information, and above all permanently located, with a decided business policy back of it.

We believe that never before in the history of the world will there be so many veterinarians, inspired by a common cause, gathered under one roof as in New Orleans this fall. Let it be our slogan "A Greater American Veterinary Medical Association." The future reveals marvelous opportunities and we must grasp them as we pass along with the full determination of holding the units together in order that we may accumulate an unusual degree of potential energy. This is the psychological time to fully develop our resources and no man with a spirit will take it for granted that the thing untried is beyond him.

Early in the spring the writer, as chairman of the Committee of Arrangements, commenced through THE JOURNAL, under

Association News, to interest the veterinary profession in the coming meeting in New Orleans. Every issue from May down to the present time has contained a variation of useful information, and if it has served the purpose, the author has been well repaid for his efforts.

The long-looked-for time will soon be here, and this is the last opportunity that the writer will have available to appeal to you to come to the Crescent City for the purpose of participating in one of the greatest scientific organizations in the world, composed of a body of men whose motto is "I Can." The life that is fightless is worthless, and it is man's proudest privilege to solve and overcome the forces of adversity.

E. I. S.

OUR FRIEND DR. RUTHERFORD OF OTTAWA KEPT BUSY.

Much to the disappointment of his numerous friends, it is doubtful whether Dr. J. G. Rutherford, an ex-President of the A. V. M. A., will be able to attend the New Orleans meeting. In addition to his work on the Railway Commission for Canada, he is Chairman of a Special Commission for the purpose of investigating the possibilities of the development of the reindeer, musk ox, and caribou in the Arctic and sub-Arctic regions of "Our Lady of the Snows;" and his work as special Royal Commissioner to inquire into matters connected with the conduct of running race meetings, etc., which we alluded to in the October Journal, will occupy considerable of his time, as he has called a series of hearings in this inquiry which will extend through the prairie provinces and British Columbia, and it will be well into November before the Doctor gets back from the Pacific Coast.

In a communication to the editor, Dr. Rutherford says: "Personally, I am for the time being pretty well divorced from the veterinary profession, but as you will probably realize, it is somewhat difficult for a man who has spent his life in it to forego all interest in its activities, even if he wanted to, which is certainly not the case with me."

We wish for the Doctor a pleasant trip, but we are sorry at the likelihood of his being absent from the A. V. M. A. meeting in November.

HOW TO RAISE STANDARDS IN VETERINARY EDUCATION.

By WILLIAM N. BERG, Washington, D. C.

- I. Introduction.
- II. Progress of medical education since 1904.
- III. Methods used by the Council on Medical Education.
 - a. Determination of the medical needs of the country.
 - b. Classification of medical schools.
 - c. Publicity.
 - d. Other activities of the Council on Medical Education.
- IV. Bibliography.

I. INTRODUCTION.

The main purpose of the present paper is to call attention to the following:

- (1) The unfortunately low standards in veterinary education as compared with those in human medicine.
- (2) As late as 1904 the general level of medical education was practically no higher than that of veterinary education at the present time.
- (3) In 1904 the medical profession faced the situation squarely and openly. Through the American Medical Association a vigorous campaign was launched against fraudulent and low grade medical schools. These were forced to close and medical education placed upon standards inferior to none other.
- (4) The same can be done and should be done by the American Veterinary Medical Association for veterinary education. If properly approached, perhaps such agencies as the Carnegie Foundation for the Advancement of Teaching and the American Medical Association would coöperate.
- (5) An upward revision in veterinary educational standards can probably be brought about by applying the methods of the above agencies to veterinary colleges, examining boards, etcetera.

The numerous recent discussions on veterinary educational standards and the need for their revision speaks well for those who are moved by enlightened discontent. The general feeling seems to be that veterinarians as a class should be as well trained as medical men and should occupy the same station in life. That they are not as well trained as medical men and do not occupy the same high place needs no proof. It is shown by the long

fight necessary before the veterinarians obtained "recognition" in the army.

The following quotation is from the Bulletin of Yale University, School of Medicine, 1918-1919, p. 19:

"ADMISSION OF STUDENTS.
PREPARATION FOR MEDICAL STUDIES.

Students who enter college with the idea of subsequently studying medicine should realize that the broader the foundation a professional man can obtain the more efficient he will be. Those who are in a position to do so are recommended, therefore, to complete their college course before entering the School of Medicine, including in it the necessary special studies in the sciences.

In view of the fact that circumstances do not permit all prospective medical students to complete their college course, *two years of college work has been fixed as the minimum general requirement for matriculation in this school.* Work in Schools of Dentistry, Pharmacy and Veterinary Medicine is not accepted as the equivalent of college work."

The last sentence shows how high veterinary colleges stand in the esteem of certain university authorities. Although this sentence was not found in several other medical school catalogs it is plainly implied there. This means that a second year student in Cornell Veterinary Medical College, for example, who changed his mind and decided to study human medicine, would find that he was not eligible to enter the medical schools of Yale and other universities, although he had just finished two years in a good professional school.

But veterinarians need not permanently lag behind in the educational procession. Fifteen years ago medical education in the United States was at as low level as veterinary education is today. Through a vigorous campaign many improvements have been made until at present, the high grade medical schools here are as good as those in Europe. If the marked improvements to be described presently, can be made by medical men why can they not be made by veterinarians? The work of the American Medical Association in raising medical educational standards is nothing short of wonderful. The methods used are described in the literature; there are no secrets and it ought to be possible for the veterinary medical profession, through its association, to conduct a similar campaign with similarly splendid results.

II. PROGRESS OF MEDICAL EDUCATION SINCE 1904.

This is well described by Colwell, (4, p. 3.)†

"In previous reports attention was called to the rapid improvements in medical education in the United States, secured through a campaign which was begun by the American Medical Association in 1904. At the beginning of the campaign, the number of medical schools in this country exceeded the total in all the rest of the world. There was clearly an oversupply of medical schools. Many of them were poorly equipped and adhered only to low entrance requirements, while some were conducted for profit and required for admission little or nothing in the way of educational qualifications. It was shown that in 1904 only four medical colleges were requiring any college work for admission, and only from 20 per cent to 25 per cent were actually requiring a four-year high-school education. Under the methods pursued, it is not surprising, therefore, that in 1904 the number of medical students reached the amazing total of 28,142, and that in that year 5,747 physicians were graduated.

The campaign for improvement successfully urged the merging of two or more medical colleges in each of our various cities or States. This resulted in a rapid reduction in the total number, but a material strengthening of the quality of the institutions remaining. At the same time higher standards of preliminary education were urged consisting, first, of the four-year high-school education, then one year, and finally two years of premedical college education. In 1916 the two-year entrance standard was made an essential for any medical school to be considered as acceptable by the American Medical Association. In that year 48 colleges had already put into effect the higher requirement and also 16 State boards had made it the minimum essential of preliminary education of graduates who might seek licenses in those States. Attention was also called to the great improvements in the way of full-time salaried teachers, greatly improved laboratories, the closer relations with teaching hospitals, and the securing of greater endowments.

At the present time there are 90 medical colleges; the number of students during 1917-18 was 13,630, and the number of graduates in 1918 was 2,670.¹ These lower figures represent the normal decrease that was expected under the increased entrance requirements, and are not due to the war. The following tabulation shows the decided increase since 1904 in the number of colleges which have enforced higher entrance requirements and in the number of students and graduates who have held the higher entrance qualifications:

†The figures in parenthesis refer to the bibliography, at end of the paper.

¹Altogether 2,807 students successfully completed the courses of the senior year. From 137, however, in the Universities of California and Minnesota and in Rush Medical College, the degrees have been withheld pending the completion of a hospital internship.

Entrance requirements	Colleges.				Students.				Graduates.			
	1904		1918		1904		1918		1904		1918	
	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.
Four-year high-school education or less ¹	158	97.5	7	7.8	26,391	93.8	631	4.6	5,378	93.6	258	9.7
One year of college work.....	.....	.....	34	37.8	.....	.....	5,944	43.6	.....	.....	1,147	43.0
Two years of college work.....	4	2.5	49	54.4	1,761	6.2	7,055	51.8	369	6.4	1,265	47.3
Totals.....	162	....	90	....	28,142	....	13,630	....	5,747	....	2,670	....

¹It is not probable that in 1904 more than about 30 colleges (20 per cent) were actually requiring a four-year high-school education as a minimum for admission.

Instead of 4 (2.5 per cent) medical schools which in 1904 required any college work for admission, for the session of 1917-18, 83 (92.2 per cent) medical schools required one or two years of such work; instead of only 1,761 (6.2 per cent) students enrolled in the higher standard colleges in 1904, during last year 12,999 (95.3 per cent) students were enrolled in the higher standard colleges; and instead of only 369 (6.4 per cent) graduates who were turned out by the higher standard colleges in 1904, at the end of last session 2,412 (90.3 per cent) graduated from those institutions. The 7 medical schools which still require only a high-school education or less for admission are also inferior in other respects, and are reported as not recognized by from 27 to 38 State licensing boards. This general adoption by medical schools of the two-year standard of preliminary education and the other improvements made have brought medical education in this country to a par with that of leading countries of Europe and elsewhere."

How did the American Medical Association bring about these splendid reforms? A Council on Medical Education was formed, composed, of course, of men who understood the nature of the improvements to be made. The Council studied the medical needs of the country, *i. e.*, how many physicians are desirable per 1000 inhabitants; how many graduates per year; and how many good medical schools are required. Secondly: the Council proceeded to classify or grade the medical schools on their merits with a view to the elimination of those that were obviously unfit; the merging of small schools into larger and better ones; the unification of the curriculum etc. Thirdly: the Council engaged in a campaign of publicity that mercilessly exposed many poor schools run for profit as well as numerous schools that plainly were frauds. Fourthly: the Council has undertaken and carried

on numerous lines of work such as classifying the high schools and colleges; unifying entrance requirements, etc. These activities will be described more in detail.

The Council apparently has no legal authority; it is a civilian body; not connected with any government office. Nevertheless their publications, suggestions and classifications have almost as much force as if authorized by law.

III. a. DETERMINATION OF THE MEDICAL NEEDS OF THE COUNTRY.

According to Colwell, (4, p. 10) :

"Statistics show that this country has one physician to every 739 people, as compared with one to every 1,500 to 2,500 people in the countries of Europe just before the war began. In recent years, however, the demand for medical graduates to fill positions as hospital internes, health officers, medical inspectors, medical teachers, and other positions of responsibility has been greatly increased. This increased demand is due, not to any scarcity of medical graduates, but to the improved qualifications of those now graduating from our medical schools. In earlier years this demand was not so great because few of the graduates then turned out were sufficiently qualified, educationally or professionally, to occupy the positions now open to them. The increase in the demand has been in direct proportion to the improvements in preliminary and medical education."

Is it not probable that the needs of the country for veterinarians could be ascertained, by the American Veterinary Medical Association, and the number of veterinary medical schools regulated accordingly?

Why should not trained veterinarians be employed as health officers, medical inspectors, etc., as well as medical men? They probably would be employed outside of strictly veterinary lines were they as well trained as their medical colleagues.

III. b. CLASSIFICATION OF MEDICAL SCHOOLS.

It is important to note that after classifying the medical schools the Council on Medical Education published its lists broadcast, so that everyone, and especially the prospective student, could thoroughly understand the basis of the classification; which schools were good, and why. The present standards for grading medical schools, although higher than those for veterinary schools, are temporary only; they will be raised higher still, (6, p.15; and 1, p. 127).

In the "Choice of a Medical School," a publication designed specially for the information of the prospective medical student, the Council gives the detailed schedule for the grading of medical schools. The following extracts from the schedule are sufficient to show its general scope.

**STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF
THE AMERICAN MEDICAL ASSOCIATION.**

SCHEDULE FOR THE GRADING OF MEDICAL SCHOOLS.

Schools will be rated on civil service basis on a scale of 1,000 points. The data relating to each school will be grouped under ten general heads in such a manner that the groups will have as nearly equal weight as possible, each group allowing a possible 100 points (10 per cent) out of a possible 1,000 points (100 per cent.). The revised schedule showing the general heads under which the data will hereafter be arranged is as follows:

1. Character of curriculum, grading of course, sequence of subjects, supervision, administration, etc.
2. Medical school buildings; adaptability, light, heat, ventilation, cleanliness, etc.
3. Laboratory facilities and instruction.
4. Dispensary facilities and instruction.
5. Hospital facilities and instruction in medicine, surgery, obstetrics, and gynecology.
6. Hospital facilities for instruction in medical specialties and provision for clinical clerkships, necropsies, etc.
7. Full-time instructors and assistants with special reference to their special qualifications and evidences of their work, including research.
8. Faculty, number, qualifications and organization of, including the staff of teaching hospitals.
9. Library, museum, charts and special apparatus and evidences of the use made of them.
10. Showing of graduates at state board and other examinations and other evidences by which the training received is indicated.

It will be noted that financial income is not referred to in the ten heads outlined. It is quite evident, however, that no college can secure an adequate number of expert full-time teachers, provide well equipped laboratories, library and museum, and be conducted in accordance with present-day medical knowledge without a liberal income in addition to students' fees.

Meaning of Classes A, B, and C.

Class A Colleges will, as heretofore, be those which are acceptable; Class B, those which, under their present organization, give promise of being made acceptable by general improvements, and Class C those

- (a) Which require a complete reorganization to make them acceptable.
- (b) Which do not keep satisfactory records of their students in regard to entrance requirements, attendance, grades in courses, division into classes and reasons for promotion.
- (c) Which do not enforce their requirements in regard to admission (including those admitted to advanced standing), promotion and graduation.

(d) Which give the major portion of their instruction after 4 o'clock in the afternoon.
 (e) Which are privately owned and conducted for profit.
 (f) Which for other specific reasons are not eligible for inclusion in Class B.

ESSENTIALS OF AN ACCEPTABLE MEDICAL COLLEGE.

(Revised to June 15, 1918)

The following outline of the essentials of an acceptable medical college was issued by the Council on Medical Education of the American Medical Association for its suggestive value in the rapid development in progress in the medical colleges of the United States. It also represents the standard by which medical colleges are measured in the Council's classifications.

REQUIREMENTS FOR ADMISSION.

1. The minimum requirement for admission to an acceptable medical college is a four-year high school education or its full equivalent and two years of work in a college of arts and sciences approved by the Council as follows:

I. High School Requirements.

II. Premedical College Course.

(c) Beginning Jan. 1, 1918, the minimum requirement for admission to acceptable medical schools, in addition to the high school work specified above, will be sixty semester hours of collegiate work, extending through two years, of thirty-two weeks each, exclusive of holidays, in a college approved by the Council on Medical Education. The subjects included in the two years of college work should be in accordance with the following schedule:

SCHEDULE OF SUBJECTS OF THE TWO-YEAR PREMEDICAL COLLEGE COURSE.

Sixty Semester Hours* Required

Required Subjects:	Semester Hours
Chemistry (a)	12
Physics (b)	8
Biology (c)	8
English composition and literature (d)	6
Other nonscience subjects (e)	12

Subjects Strongly Urged:

French or German (f)	6-12
Advanced botany or advanced zoology	3 - 6
Physiology	3 - 6
Advanced mathematics, including algebra and trigonometry	3 - 6

Additional courses in chemistry 3 - 6

Other Suggested Electives:

English (additional), economics, history, sociology, political science, logic, mathematics, Latin, Greek, drawing.

*A semester hour is the credit value of sixteen weeks' work consisting of one lecture or recitation period per week, each period to be not less than fifty minutes net, at least two hours of laboratory work to be considered as the equivalent of one lecture or recitation period.

SUGGESTIONS REGARDING INDIVIDUAL SUBJECTS.

(a) *Chemistry*.—Twelve semester hours required.

III. Approved Colleges of Arts and Sciences.

A tentative list of colleges of arts and sciences approved by reliable standardizing agencies has been prepared by the Council on Medical Education, and revisions of this list will be published from time to time.

Undue liberality in the acceptance of certificates from secondary schools unendorsed by approved standardizing agencies will be registered by the Council as a failure to comply with its requirements and the college will be dropped from the approved list.

FACULTY.

9. (a) The college should provide at least *eight expert thoroughly trained professors in the laboratory branches*, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects.¹¹ There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having *sixty students or less* in each class, there should be *at least one full-time salaried assistant each in the departments of (1) anatomy, (2) physiology (3) pathology and bacteriology, and (4) physiologic chemistry and pharmacology*, and *one additional assistant in each of these departments should be provided for each additional thirty students enrolled*. This represents a low average of the full-time assistants already employed by the acceptable medical colleges.

(b) The faculty should be made up of graduates of institutions recognized as medical colleges. * * *

This last requirement was perhaps made necessary by such conditions as the following: Flexner, Carnegie, Teaching; Bulletin 4, p. 176, 1910.

"Chicago, varied and picturesque in this as in all else pertaining to medical education, supports four postgraduate institutions. Only unmistakable scientific activity could dislodge the unpleasant suspicion of commercial motive thus suggested. No such activity is in any of them observable. A cynical candor admits in one place that 'it pays the teachers through referred cases'; in another, 'it establishes the reputation of a man to teach in a postgraduate school;' in a third, 'it pays through advertising teachers.' In one a youth was observed working with a microscope. Inquiry elicited the fact that he was the teacher of clinical laboratory technique, lecturing in the absence of the 'professor.' The following dialogue took place:

'Are you a doctor?'

'No.'

'A student of medicine?'

'Yes.'

'Where?'

'At the Jenner Night School.'

'In what year?'

'The first.'

A first-year student of medicine in a night school was thus laboratory instructor and pro tempore lecturing professor in clinical microscopy in the Chicago Polyclinic."

OTHER TEACHING FACULTIES AND FINANCES.

18. Statistics show that modern medicine cannot be acceptably taught by a medical school depending solely on the income from students' fees. No medical school should expect to secure admission to, or be retained in Class A, therefore, which does not have an annual income of at least \$25,000 in addition to the amount obtained from students' fees.

For a criticism of the Council on Medical Education's classification of medical schools, see Pritchett; Ninth Annual Report; Carnegie Foundation for the Advancement of Teaching, p. 61, 1914.

In comparing the standards of the Bureau of Animal Industry (8) with those of the Council on Medical Education attention may be centered on the two important criteria, as stated by Pritchett (2, p. 70):

"These two criteria—the basis of selection of the student body and the basis of selection of the teaching body—to my thinking outweigh all other considerations."

Undoubtedly the Bureau adopted the highest standards practical under the conditions. The Bureau's two year high school requirement for entrance effective September 1918 seems to be well in advance of the actual requirements of many veterinary colleges according to the following quotation from the Report of the Association of State and Provincial Veterinary Colleges' Committee on Entrance Requirements, May, 1919 (9, p. 236):

"Your committee recommends that this association most heartily endorse the amendment offered by Dean L. A. Klein at the Kansas City meeting, which is as follows:

Beginning with the collegiate year of 1918-19, the matriculation requirements of an approved veterinary college shall be not less than one year of high school work or equivalent studies taken in other preparatory schools. Beginning with the collegiate year of 1919-20, said requirements shall be not less than two years of high school work or equivalent studies taken in other preparatory schools. Beginning with the collegiate year

of 1920-21 the matriculation requirements shall be not less than four years of high school work * * * ."

A comparison of the requirements shows, for example, that for admission to a medical school acceptable to the Council the prospective student must have completed a four year course in a high school and two years study in the sciences in a college, while the prospective veterinary student, to enter an accredited veterinary college need offer only two years of high school work (8, p. 3). It is true that some of the veterinary colleges have entrance requirements of four high school years. It is equally true that many medical schools have entrance requirements higher than the minimal requirements of the Council. Thus the Johns Hopkins University Medical School receives as candidates for the degree of Doctor of Medicine, college graduates only (p. 54, J. H. U. Circular of the Medical Department 1918-1919). The Harvard Medical School have the following requirements for admission: (Official Register of Harvard University; Vol. 15, Dec. 28, 1918, page 30):

"As candidates for the Degree of Doctor of Medicine the School receives the following:

I. Graduates in arts or science of approved colleges or scientific schools.

II. Students who have two years of work in a college or scientific school of high rank, provided they present certificates that they have maintained a rank in the first third of their class."

With regard to the second criterion, the basis of selection of the teaching body, it is to be noted that the faculty of an acceptable medical school (p. in Journal A. V. M. A., 9 a) must have at least eight full time professors, who devote their entire time to instruction and research. The faculty of an accredited veterinary college need have but five professors:

Circular 128, p.7: "Regulation VII.—Number of veterinarians.

On the faculty of every veterinary college there shall be at least five graduate veterinarians from accredited veterinary colleges teaching major subjects, each of whom shall have had not less than one year's additional training in some accredited veterinary college or three years' experience in teaching or in practicing veterinary science subsequent to graduation from an accredited veterinary college."

But none of the regulations require that any of the five on the faculty shall be full-time instructors or that they shall be interested in research.

The idea that a good medical faculty should consist entirely of medical practitioners who incidentally teach, is no longer taken seriously. Section 9 a (p. in Journal A. V. M. A.) of the Council's schedule ought to apply to veterinary faculties. The following table shows that in two very important respects—the selection of the student body and the selection of the teaching body—the veterinary colleges are woefully behind the medical schools.

MINIMAL REQUIREMENTS.

**As defined by the Council on Medical Education (5 and 6) for medical schools
and the Bureau of Animal Industry (8) for veterinary colleges.**

	Medical Schools	Veterinary Colleges.
Admission.....	4 years high school and 2 years college	2 years high school
Teaching weeks per college year.....	32	28
Total hours, four year course.....	3,840	3,380
Full time instructors on faculty.....	8	0
Part time instructors on faculty.....	....	5

III. c. PUBLICITY.

As an example of the numerous publicity activities of the Council, and especially of their desire to inform the prospective student of the relative merits of the various schools, the two following parts of statistical tables are taken from "Choice of a Medical School." These tables are so complete that they alone are sufficient to indicate the desirable schools. And as numerous studies have shown, the high grade schools are no more expensive to the student than the poorer ones. It is to be noted that the high grade medical schools have on the average, one instructor for every 2 or 3 students. The complete tables 1 and 2 contain data on 105 and on 96 medical schools respectively.

TABLE I.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

NAME AND LOCATION OF COLLEGE	Large- nail Number of City Bureau of Census of 1910	Population of City where College Is located		Large- nail Number of 1910	Estimated Population of 1916		Classifi- cation by Council on Medi- cal Education.	No. of Students Registered 1917-18	Grad- uates 1918	Women Men	Women Men	B.S., or Ph.B., With A.B.	Number of Teachers Years in College	Total Fees (Dollars)
		Male	Female		Male	Female								
ALABAMA														
1 University of Alabama School of Medicine, Mobile	58,221	A	44	11	11	4	4	44	42	32	165	160	160	185
ARKANSAS														
2 University of Arkansas Medical Department, Little Rock	57,343	B	52	21	21	3	3	52	34	50	50	50	50	50
CALIFORNIA														
3 College of Medical Evangelists, Loma Linda	125	B	425	45	76	10	10	40	36	166	161	161	161	161
4 College of Physicians and Surgeons, Los Angeles	503,812	B	57	18	18	3	3	122	36	220	217	217	217	227
OAKLAND COLLEGE OF MEDICINE AND SURGERY, OAKLAND	189,604	C	15	2	3	1	1	40	39	193	193	193	193	193
6 COLLEGE OF PHYSICIANS AND SURGONS OF SAN FRANCISCO	463,516	C	53	2	3	15	15	72	34	200	155	155	155	150
7 HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC, SAN FRANCISCO—H.?	463,516	A	10	1	10	5	2	137	34	200	155	155	150	150
8 STANFORD JUNIOR UNIV. SCHOOL OF MED., SAN FRANCISCO	463,516	A	72	10	10	5	2	137	34	200	155	155	150	150
9 UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, SAN FRANCISCO	463,516	A	135	15	15	4	6	2	7	66	32	85	75	75
COLORADO														
10 UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, DENVER	260,800	A	73	4	6	2	2	73	4	6	2	2	2	75

TABLE 1 (Continued)

Marginal Number	NAME AND LOCATION OF COLLEGE	Executive Officer	Session of 1918-19		Marginal Number
			Begins 1918	Ends 1919	
1	University of Alabama School of Medicine, Mobile ARKANSAS	T. H. Frazer, M. D., Dean.....	Oct. 3	June 4	1
2	University of Arkansas Medical Department, Little Rock CALIFORNIA	Morgan Smith, M. D., Dean.....	Sept. 16	June 4	2
3	College of Medical Evangelists, Loma Linda.....	Newton Evans, M. D., President.	Sept. 1	May 29	3
4	College of Physicians and Surgeons, Los Angeles.....	Charles W. Bryson, M. D., Dean.....	Sept. 3	June 12	4
5	Oakland College of Medicine and Surgery, Oakland College of Physicians and Surgeons of San Francisco.....	H. D'Arcy Power, M. D., Dean.....	Aug. 12	June 5	5
6	Hahnemann Medical College of the Pacific, San Francisco—Hi. ⁷ Leeland Stanford Junior Univ. School of Med., San Francisco.....	William Opulus, M. D., Dean.....	Oct. 1	June 17	7
7	University of California Medical School, San Francisco.....	Frank W. Lynch, M. D., Acting Secretary.....	Sept. 28	June 4	8
8	University of Colorado School of Medicine, Denver ⁸	Charles N. Meader, M. D., Dean.....	Sept. 30	June 4	9
9					10

TABLE 2.—NONRECOGNITION OF MEDICAL COLLEGES
This Table, Based on Official Reports, Shows the Numerous Pitfalls to Be Avoided by Prospective Medical Students
 Colleges marked (x) have been reported as not recognized by the states in the columns of which the letter appears.

COLLEGE	Marginal Number																														
	Classification by Council on Medical Education																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
Alabama	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC		
Alaska																															
Arizona																															
Arkansas																															
California																															
Colorado																															
Connecticut																															
Delaware																															
Distr. of Columbia																															
Florida																															
Georgia																															
Idaho																															
Illinois																															
Indiana																															
Iowa																															
Kansas																															
Louisiana																															
Kentucky																															
Maine																															
Massachusetts																															
Maryland																															
Michigan																															
Minnesota																															
Mississippi																															
Missouri																															
Montana																															
Nebraska																															
New Hampshire																															
Nevada																															
North Dakota																															
Ohio																															
Oklahoma																															
Oregon																															
Pennsylvania																															
Rhode Island																															
South Carolina																															
Tennessee																															
Texas																															
Utah																															
Vermont																															
Virginia																															
Washington																															
West Virginia																															
Wisconsin																															
Wyoming																															

- 1 University of Alabama School of Medicine
- 2 University of Arkansas Medical Department
- 3 College of Physicians and Surgeons, San Francisco
- 4 Leland Stanford Junior Univ. School of Medicine
- 5 University of California Medical College
- 6 College of Physicians and Surgeons, Los Angeles
- 7 Oakland College of Medicine and Surgery
- 8 College of Medical Evangelists
- 9 University of Colorado School of Medicine
- 10 Yale University School of Medicine

TABLE 2 (Continued).-

COLLEGE	Marginal Number	Classification by Council on Medical Education										Reported Non-Recognition by State Licensing Boards	Number							
		30	31	32	33	34	35	36	37	38	39									
1 University of Alabama School of Medicine.....	A																			
2 University of Arkansas Medical Department.....	B																			
3 College of Physicians and Surgeons, San Francisco.....	C																			
4 Leland Stanford Junior Univ. School of Medicine.....	A																			
5 University of California Medical College.....	A																			
6 College of Physicians and Surgeons, Los Angeles.....	B																			
7 Oakland College of Medicine and Surgery.....	C																			
8 College of Medical Evangelists.....	B																			
9 University of Colorado School of Medicine.....	A																			
10 Yale University School of Medicine.....	A																			

(To be Continued.)

THE DIFFERENTIAL FEATURES BETWEEN MELANOSIS AND MELANOSARCOMA.*

S. A. GOLDBERG

Department of Pathology and Bacteriology, New York State Veterinary College, at Cornell University, Ithaca, N. Y.

PART ONE: A REVIEW OF THE LITERATURE.

This subject has always attracted a considerable amount of attention among the veterinary profession, not only because it is so common among domesticated animals but also because of the striking appearance of this process. Other tumors blend in more or less with the surrounding tissues, while in this case the black patches or nodules stand out in contrast to the neighboring structures. The interest aroused is reflected in the various theories that were advanced regarding its nature, diagnosis, and particularly the prognosis of this affection. Much as has been written upon this subject, we are still in the dark concerning certain phases of the process of this autochthonous pigment. The subject of pigmentation is alive even today. In studying pathology, we were taught that there are three varieties of autochthonous or endogenous pigments, melanin, lipochrome, and haemofuscin. Recently, Dolley and Guthrie pointed out that melanin is the only endogenous pigment, and that lipochrome, and perhaps also haemofuscin, should be classed with the exogenous pigments. They also demonstrated that the melanin found in nerve cells is a product of chronic depression, and does not belong there normally.

The term melanosis indicates an abnormal deposit of melanin in various parts of the body. As used in the veterinary literature it indicates a benign pigmentation of the tissues. It may be localized, or more or less distributed through the various organs of the body, in which case it is known as generalized melanosis. The term melanosarcoma denotes an embryonal connective tissue tumor that in its growth infiltrates the surrounding structures and spreads throughout the body by metastasis. It is classed with those sarcoma that undergo secondary changes. In this case the secondary change is a deposition of melanin.

Melanin is an endogenous pigment. It appears to be a product of proteid metabolism. It usually contains the elements

* Presented before the twenty-ninth annual meeting of the New York State Veterinary Medical Society, July 24, 1919.

carbon, hydrogen and nitrogen in the general proportions of 1, 5, 5. It is said to be free from sulphur and iron, but possesses a strong tendency to unite with these elements. It may be dissolved slowly by strong alkalis, and bleached by peroxid of hydrogen, chlorin, and by 10% potassium permanganate followed by dilute sulphurous acid. Heated with strong alkali, melanin from tumors yields indol, skatol, volatile fatty acids, and an ether soluble acid which gives a dark blue color with ferric chloride. The chief product is melanic acid. Injected subcutaneously, melanin is apparently converted into a colorless substance, melanogen, which is excreted in the urine, the latter turning brown or blackish brown on standing. Artificially melanin may be obtained by heating together proteids and strong HCl.

Piettre isolated from sarcomatous tumors in horses a protein fraction and a more condensed jet-black nucleus insoluble in acids but easily soluble in alkalis.

Melanin occurs as sepia in the ink sac of the cuttlefish or squid. This animal uses this ink to protect itself against possible enemies. On the approach of an enemy it liberates the ink, blackening a considerable area of the water around it, thus blinding its opponent. It occurs in the skin, hair, retina and choroid coat of the eye in man and animals excepting, perhaps, the albinos. Gortner obtained from white rabbits, from albino silky fowls, and from white leghorn fowls a product similar to the "white melanin" which Spiegler obtained from sheep's wool and white horse hair. He states, however, that it is a result of the action of alkalis upon keratin and not true melanin. Melanin also occurs in the cerebro-spinal meninges and in the intima of the aorta in certain animals. In calves and other animals it often occurs on the serous surfaces and in the intermuscular connective tissue in the form of black spots. The greatest amount of melanin is found in the melanosarcoma. No estimation as to the amount of melanin has been made in animals. In the negro's skin the amount is 1 gm. In a case of melanosarcoma in man, the liver contained 300 gms. and the subject about 500 gms.

The melanotic pigment is produced by chromatophores. These are specialized cells normally found in the skin in a dormant state. It is derived, according to Schultz, directly from the nuclear materials. Chromatin is thrown out of the nucleus

into the cytoplasm. This chromatin becomes changed into a material having the staining reactions of nucleolar substance. Further change leads to the transformation of this material into pigment. He points out that this pigment is not a hemoglobin derivative or a degeneration in the ordinary sense. It is the product of the specialized physiological activity of the cell by which nuclear derivatives are transformed directly into pigment. He considers these cells as mesodermal in origin. In changing from a dormant to an active state, they seem to take up fluid and swell, then multiplication takes place by mitosis and later, more rapidly, by amitosis. In the work of Von Szilly, the pigment bearers were found to arise from the chromatin of the nucleus and pass into the cytoplasm. He concludes that some of these are of a degenerative type and their appearance is associated with a partial breakdown of the nucleus. The change of colorless pigment bearers into pigment is brought about by specific cell ferments, which act on the chromatin.

According to Gortner, the formation of melanin is brought about by the interaction of an oxidase and an oxidizable chromogen. He distinguishes at least two types of melanin. Those that are soluble in dilute acids he calls melano-proteids. Those that are insoluble in dilute acids are of an unknown constitution and found in the form of granules.

Von Fürth regards melanin as developed by the action of intracellular oxidases ("tyrosinase") upon the chromogen groups of the protein molecule. A tyrosinase has been demonstrated in the ink sac of the cuttlefish. Gessard demonstrated the presence of tyrosin and tyrosinase in the melanoma of the horse, and concluded that the pigment of tumors and that of the cuttlefish are produced by the action of tyrosinase on the tyrosin and other aromatic compounds.

Halle demonstrated that under the influence of an enzyme contained in the adrenal, tyrosin is converted into adrenin. It is when the adrenal or its secretion is deficient, as occurs in Addison's disease, that the bronzing of the skin occurs. The greater pigmentation of exposed parts has been explained by the more active oxidation of these parts.

Jaeger claims that the production of melanin is a secretion of the cell plasma brought about by a melanogenic ferment, so

that the suprarenin present in the cytoplasm is transformed into a black pigment by oxidation.

The question as to whether the chromatophore is of ectodermal or mesodermal origin has attracted considerable attention. It is even at the present time far from settled. Most authors tend toward the opinion that it is of mesodermal origin. There is a good deal of evidence, however, that the chromatophore is an epithelial cell. In man there are often found congenital brown or black areas on the skin, called pigmented moles or nevi pigmentosi. These areas may be flat or slightly raised, and often give rise to metastases. Ziegler, claiming that the chromatophore is a specialized lymphendothelial cell, classified these moles as hypertrophic lymphangioma. Ewing suggests that until further knowledge on this subject is obtained, the name melanoma be used to include these nevi, the melanotic spots in the eye, and the pigmented areas in the meninges. He suggests that where the cells may be distinguished as mesodermal they may be called melanosarcoma, and epithelial malignant tumors containing melanin be called melanocarcinoma.

Jaeger, in his studies on melanosis in calves, concludes as follows:

1. Melanosis in calves and sheep as well as in rare instances in full grown cattle, is congenital.
2. The pigment cells are lymph-endothelial cells.
3. The melanin production is in the cell itself. This differentiation is not brought about by any influence outside that cell. These cells may multiply and become transformed into tumor cells.
4. Calf melanosis is different from melanosarcomatosis. In the latter they are connective tissue cells that acquire, later in the life of the organism, through certain influence, a power to produce pigment.

MacLachlan recorded a case in man of extensive pigmentation of the brain associated with nevi pigmentosi of the skin. He described the chromophores as being oval and spindle shaped. The latter invariably contained pigment. The oval cells did not always contain pigment. These were often perivascular. He concluded that this is a benign melanotic tumor primary in the brain, and the other primary in the skin.

The point of origin of malignant melanomas in man is chiefly the nevi pigmentosi in the skin and the choroid coat of the eye, less frequently in the meninges, rectum, and other organs. In rare cases no local point of origin can be demonstrated clinically or at autopsy. In the domesticated animals the point of origin seems to be mainly in the skin usually at the base of the tail, in the region of the shoulder, or in the mammary glands. Also in the meninges and in the cæcum. In the cases described in the veterinary literature, however, many of the descriptions were such as to make it impossible to determine the point of origin. Furthermore, the term melanosis is used rather loosely, very often to designate the condition known as melanosarcoma. I shall endeavor to review briefly the literature.

Andrieu described a case of melanosis in the kidneys of a two months old heifer.

Wooldridge reported a case of arborous deposits in the omentum and on the capsule of the spleen of a bullock.

Bailleux and Digive described a case of melanosis in a calf. They considered it as a result of hemorrhages in which the hematin was changed to melanin.

Bru recorded a case of generalized melanosis in a heifer that showed no emaciation or general physiological disturbance. The spinal cord was found to be of a black color throughout with extension into the nerves for some distance from the cord. The brain membranes were thickened and covered with a dark-colored fluid.

Mettam reported a case of melanosis in the lungs and liver of an ox. The animal was in good condition, and the carcass passed for food. The lungs contained black patches from the size of a lobule to that of the palm of the hand. The cortical portion of the bronchial gland was pigmented. In the liver the pigment was scattered beneath the serous surface, and extended into the interlobular tissue in fine arborescent ramifications. Microscopically, in the alveolar walls of the lung, the pigment was in fine granules appearing like minute cocci. The pigment was contained in large branching cells in the lymphatics, clefts and spaces. Some of the pigment was in leucocytes and in vascular endothelium. These cells were largely ~~found~~ around the blood vessels. He has excellent figures showing the location of the pigment.

Young observed a case of a red and white cow with melanosis in the lungs, capsule of liver, subcutaneous connective tissue of the back, the spinal cord, pleura, peritoneum, and lymph glands. The carcass was passed for food and no ill effects were reported from the customers who used it.

Lewin described a case of generalized melanosis of a four year old hen in which the feathers, beak and skin were bluish black. The intermuscular connective tissue contained various-sized melanotic spots. The serous membranes, the intestinal mucosa, and the periosteum were black. The bones contained black spots, and the bone marrow was dark red. There were small black spots on the gizzard, and on the pericardium. Microscopically, the pigment was in the form of fine granules that were deposited in the tissues.

These cases are those of melanosis. They do not present the characters of malignancy. There is no cachexia, emaciation, or other evidence of intoxication or disturbed metabolism. The deposits are not in the form of extensive nodular growths. The following are cases of melanosarcoma and called so by the authors or designated as melanosis.

Heulsen reported a case of a melanotic tumor of the tail in a bay horse that recurred seven months after removal.

Lathrop recorded a case of a melanotic tumor on the tail of an eighteen year old bay gelding. This was extirpated. Seven months later this animal had a tumor eight inches in diameter at the same spot, and a small growth underneath the tail and near the base. The original tumor was two and a half inches in diameter.

Harrison described a case of a melanotic tumor on the sacro-lumbar plexus of a horse causing partial paralysis. There was a history of a fall, and the clinical diagnosis was given as locomotor ataxia and fracture of a vertebra. The autopsy revealed a melanotic tumor the size of a hickory nut imbedded into the bony structures, surrounding and pressing upon one of the main branches of the posterior portions of the lumbar plexus.

Harrison recorded a case of a four pound melanotic tumor in the cæcum of an eighteen year old brown gelding.

Peters described a case of melano-sarcoma in a twelve year old mare that showed stiffness behind at first, then also in the back and neck. Later she had difficulty in feeding from the

ground and began to stagger, like a horse with spinal meningitis. On autopsy, melanotic tumors were found in the spleen, liver, lungs, dorsal and lumbar vertebræ, the sixth rib, the mammae, and three small nodules were found in the skin under the tail.

Cagny observed a melanotic tumor in a mare that was attached to the sacrum, and pressed upon the iliac arteries.

Martin recorded a case of a grey gelding with a tumor, the size of a tangerine orange, on the side of the cheek. The submaxillary space and the left parotid region were filled with similar growths. The visceral and parietal peritoneum were studded with small melanotic tumors, the spleen and liver with larger ones. The right kidney and the mesenteric lymph glands were converted into one large black mass. The lungs, bronchial and mediastinal lymphatics were also badly affected. The heart was free from growths.

Koch found a melanosarcoma in the cardiac muscles of a grey horse.

Scott reported a case of melano-psammomata in the brain of an old grey mare. In each of the cerebellar hemispheres there was a dark grey neoplasm $3\frac{1}{4}$ and 2 oz. respectively. On section, it was gritty and varied in color from dark grey to black, and on squeezing, an inky colored liquid escaped. There was no melanosis around the anus or in other regions.

Rossignol recorded a case of a melanotic tumor of the shoulder in a grey stallion that was diagnosed and treated as a cold abscess. On autopsy the muscles mastoido-humeralis, posteaspinus, and abductors of the arm were involved, as was also the stomach, large colon, and spleen. The liver and the thoracic organs were free.

Boyd reported a case of a cutaneous melanosarcoma of a cow in which good results were obtained by surgical interference.

Sammon described a melanotic sarcoma in a dog. The primary tumor was on the internal toe of the left fore foot. There were metases in all the organs except the liver.

Petit, Douville and Germain recorded a case of generalized melano-sarcoma in a black French poodle in which the skin at the base of the tail was involved, with a subcutaneous and intermuscular chain of tumors extending from the caudal vertebræ to the sacro-iliac joint. The omentum and peritoneum were covered by small nodules. There were also metastases in the

mesenteric glands, intestines, kidneys, adrenals, spleen, liver, pleura, diaphragm, lungs, and the heart. The nervous system was free from lesions.

Ball and Cuny described a case of cutaneous melanosarcoma in a dog, primary on the level with the internal toe of the left paw. It was the size of a hazlenut, and it was ulcerated at one point. There were secondary growths on the skin over the entire body. There was no indication of glandular or visceral metastases.

Roberts observed in a brown pomeranean dog a spherical, pedunculated melanoma involving the cutis and subcutaneous tissue in the region of the croup. The affected area was hairless.

Taylor reported a case of an interdigital small melanotic tumor in a 3 or 4 years old spaniel. The tumor was lobulated, appearing like a fibromatous growth having many ramifications, and it was very adherent to the surrounding structures.

Seddon described a case of melano-sarcoma in an Irish terrier where no growth was found in the skin. There was metastasis in the lungs, spleen, mesentery, omentum, kidneys, pleura, peri- and endocardium.

The following cases were called by the authors melanosis but are apparently melanosarcoma.

Bunker mentioned a case in a dog. He described it as a subcutaneous swelling and gave no microscopic findings.

Rogers recorded a case in a two year old dirty grey colt in which a nodule was removed and later recurred. This was evidently a melano-sarcoma.

Hoare described a case of a 30 pound tumor involving the ear with softening and necrosis of same. The subject was a bullock. He gave no microscopic findings. This is evidently a melanosarcoma since it showed evidence of infiltration and produced softening and necrosis of the ear.

Nicholas reported a case of a white horse that was condemned at an abattoir on account of generalized melanosis. "There were melanotic infiltrations and tumors in the bones and bone marrow. The pericardium, all the lymph glands, lungs, pleura, trachea, liver, and spleen were slightly affected. There were small deposits in the spongy portions of the maxillaries, occipital, and temporal bones. The spongy portions of the cervical vertebræ were extensively affected, gradually diminishing in the dorsal,

lumbar and caudal vertebrae. The sternum was extensively affected. The ribs were more or less involved. Of the bones of the trunk, the anterior ones were less affected than the posterior. In the scapula the spongy tissue was black, the periosteum was slightly affected and the cartilage of prolongation was free. The spongy tissue, the periosteum, and the articular cartilages of the humerus, radius and cubitus, coxae, femurs, patellas, and the tibias were more or less affected. From the carpus and tarsus down, every one was normal." No microscopic description was given. From this description, it is hardly possible to form an opinion as to whether this was a case of melanosis or of melanosarcoma. The "melanotic infiltrations and tumors," as well as the affectations of the lymph glands, tend toward it being melanosarcoma. The fact that this animal was to be used for food would perhaps indicate that he did not show any evidence of cachexia. This fact makes it possible that it was melanosis.

Harger described a case of a tumor in the parotid gland of a 9 year old grey gelding in which the gland was hard, lobulated, and enlarged to twice its normal size. He removed the tumor, and stated that most of these tumors, as seen in the horse are simple melanosis without any tumor neoformation. This tumor recurred five years later. Then he stated that prognosis is very doubtful, as many cases of melanosis recur, so that they are probably melanosarcoma. He said that melanosis when it stops growing and becomes encapsulated does not recur or undergo metastasis. He claimed that it begins in the sweat glands of the skin.

Bourdelle described a case of a horse that was slaughtered for food in which he found a lobulated mass resembling a blackberry in size and aspect. This was adherent to the cranial wall, infiltrating the arachnoid and pia mater, and pressing on but not involving the cerebral hemisphere. It was located on the right side at the limit of the frontal, temporal and sphenoid fossa. No other melanotic deposits were found in any other part of the body. The animal showed no symptoms of pressure on the brain. This is apparently a case of melanosarcoma primary in the cerebral meninges.

Edwards observed a case of a 10 year old grey hunter gelding that was suffering with gradually increasing lameness with facial paralysis. Melanotic deposits were found over the cerebellar

meninges, in the tracheal, bronchial, iliac, pharyngeal, prepectoral, and submaxillary lymph glands. The only evidence against this being true melanosis is the fact that it produced paralysis. It may be a melanosarcoma primary in the meninges.

Cuny reported a case of a seven year old grey percheron mare that died suddenly. On autopsy individual nodules varying in size from that of a pea to a hazelnut were found irregularly disseminated over the parietal and visceral pleuræ, on the ribs, diaphragm, and posterior mediastinum. Around the heart they formed big grapes, surrounding the cardiac muscle covering the auricles and large blood vessels. The anterior mediastinum was destroyed by a blockade of tumors surrounding the blood vessels and nerves. The pericardium and pulmonary structures were free. Under each shoulder there was a small melanotic "deposit." This is evidently a melanosarcoma primary perhaps in the skin at the shoulder.

Chambers described a case of a 13 year old grey mare "whose body was covered with numerous melanin deposits, principally in the parotid region. The presternal, precrural, poplyteal, and other lymph glands were also diseased. This condition had been growing slowly for six years." This is apparently a case of melanosarcoma.

Cabret reported a case of a light grey gelding in which the tail, anus, sheath, flat of the thigh, urethral canal, and the inguinal lymph glands were filled with numerous melanotic deposits. There was a tumor the size of an apple on the trachea, and tumors were also found on the auriculo-ventricular openings of the heart, on the costal wall of the psoas muscle, and in the right plantar cushion. This is evidently a melanosarcoma primary in the skin.

Spreull mentions a case of an aged grey mare showing increased weakness behind and inability to rise. She had tumors of various sizes, some as big as a goose egg around the anus, vulva and perineum. Careful rectal examination revealed also a number of them extending along the course of the posterior aorta and vena cava as far as the arm could reach. The animal was destroyed and no post mortem was made. This is evidently a melanosarcoma.

Mulvey observed a case of a cat with a tumor a few centimeters back of the elbow discharging a pigmented liquid. From the main tumor there were a chain of smaller growths extending

down to the axilla. The lungs, liver, spleen, kidneys, mesentery, and lymph glands were affected. This is evidently a cutaneous melanoma. The mother tumor showed secondary changes. It also distinctly shows metastases.

Pickens described a case of a three months old Duroc Jersey pig that was diagnosed by Dr. Welch as generalized melanosis. It appeared in good health until six weeks to two months old when it ceased to grow. Shortly after, the skin lesions made their appearance and developed rapidly until the pig was killed. On the left side there were irregularly shaped nodules cutaneously and subcutaneously above the eye, posterior to the base of the ear, over the anterior border of the scapula, at the angle of the jaw, a little above the sternum, and on the posterior side of the carpus. These nodules varied from 2 cm. in diameter and 1 cm. thick to 5 cm. long and 2 cm. in diameter. Some of these were firm, others contained a liquified center. The right eye was entirely involved by a fluctuating mass about 3 cm. in diameter. The center contained whitish viscid fluid resembling pus, with a decided odor. The rest of the mass was black but softer than the other nodules. There were cutaneous nodules above the angle of the ilium and in the right flank. The latter resembled a papillary epithelioma in its appearance, excepting that the fingerlike projections were black. Of the viscera the lungs and liver contained nodules from just visible to about 1 cm. in diameter. There were a few black areas in the large intestines, the largest being about 8 mm. in diameter. The pigment was present in all the coats. The cortex of the left kidney contained an area 4 mm. in diameter, and the cortex of the right kidney contained four black spots, the largest about 1 mm. in diameter. In the right sublumbar region and beneath the last two lumbar vertebrae there was an irregularly lobulated black mass 5 cm. long, 2½ cm. in its widest place and 2 cm. thick, situated under the peritoneum. The capsules of the bronchial and mediastinal as well as some of the external lymph glands contained pigment. Otherwise, they, as well as the mesenteric lymph glands, were normal.

Microscopically the melanin was found in a supporting connective tissue containing blood vessels. Numerous polymorphonuclear leucocytes were scattered through the nodules some of them containing melanin. The infiltrated tissues showed either

necrosis or degeneration with the exception of the pleura, and the lymph glands.

Dr. Pickens confirmed the diagnosis of generalized melanosis on account of not being able to see any sarcomatous cells that gave rise to the melanin. Ewing points out that in malignant melanomas very little or no pigment may be present in the infiltrating cells. The cells may also contain an excessive amount of pigment. In the latter case it may lead to destruction of tissue and formation of cysts containing black fluid.

Some of the tumors from this case were left at my disposal. I succeeded in bleaching out sections of this material by immersing them for two to four days in peroxide of hydrogen. These bleached preparations were then stained with the usual stains. These tumors were found to be composed of groups of large spindle shaped cells and large round giant cells in nests. (Fig. 8.) Toward the center there were large endothelial cells held in a fine connective tissue stroma. Some of these cells were nucleated, others were without nuclei. A few cells contained two nuclei. In addition there were numerous blood vessels. In the center of these tumors was much necrosis. In these areas there were numerous polymorphonuclear leucocytes. Minus the pigment, therefore, the histological picture is typical of that of a sarcoma. Dr. Pickens did not mention the appearance of the sublumbar lymph glands. The mass in that region seems to be exactly where these lymph glands are normally situated. The nodule in the left submaxillary region is also suspicious of an involved lymph gland. The histological finding after removal of the pigment establishes the diagnosis of melanosarcoma, with the primary lesion perhaps in the right eye. There is a possibility that the animal had congenital melanosis which later developed into melanosarcoma.

Fitch, Boyd and Billings mentioned two cases. One was a ten years old grey mare with a melanoma of the right sacro-iliac articulation. The other was a grey gelding with many masses in the pelvic cavity. On autopsy "generalized melanosis was found but the most striking thing was the enormous melanotic spleen weighing 47½ pounds." No microscopic description was given. The illustration shows the spleen enlarged by large spherical nodules, apparently metastatic melanosarcoma.

LITERATURE

Adami, J. G. Principles of Pathology, 1910, I, 806 and 956.

Andrieu. Rec. de Med. Vet. Abst. Am. Vet. Rev., 1886, X, 518.

Bailleux and Digive. Annals de Bruxelles. Abst. Am. Vet. Rev., 1886, X, 516.

Ball and Cuny. Jour. de Zoötech. Abst. Am. Vet. Rev., 1911, XXXIX, 72.

Bourdelle. Rev. Vet. Abst. Am. Vet. Rev., 1910, XXXVII, 392.

Boyd, W. L. Cornell Vet., 1918, VIII, 125.

Bru, E. Rev. Vet. Abst. Exp. St. Rec. XVI, 1027.

Bunker, A. V. R., 1882, V, 34.

Cabret. Rev. Vet. Abst. Am. Vet. Rev., 1912, XLII, 349.

Cagny. Bull. de la Soc. Cent. Abst. Am. Vet. Rev., XXV, 1027.

Chambers. Vet. Journ. 1911, LXVII (N. S. XVIII), 735.

Cleland, J. B. Journ. Dept. Ag. West. Australia, 1907, XV, 84.

Cuny. Jour. De Zoötech. Abst. Am. Vet. Rev. 1910, XXXVIII, 406.

Dolley, D. H. and Guthrie, F. V. Presented before the 19th Ann. Meet. Am. Pathologists and Bacteriologists, 1919.

Edwards. Vet. News. Abst. Am. Vet. Rev., 1912, XLI, 348.

Ewing, James. Neoplastic Diseases. 1919, 849.

Fiteh, Boyd, and Billings. Cornell Vet., 1919, IX, 56.

Gortner, R. A. Biochem. Bul. Abst. Exp. St. Rec., XXVII, 468. Am. Nat., 1910, XLIV, 497.

Harger, S. J. J. Am. Vet. Rev., 1907, XXXII, 727; 1909, XXXV, 427.

Harrison. Ibid. 1882, VI, 31; 1883, VII, 308.

Hoare. Vet. Journ. Reprint. Am. Vet. Rev., 1887, XI, 280.

Jaeger, A. Berlin. Tierärzt. Woch., 1911, XXVII, 793.

Kitt. Th. Lehrb. d. Path. Anat. d. Haust., 1910, I, 213 and 310.

Koch. Berlin. Tierärzt. Woch. Abst. Am. Vet. Rev., 1889, XIII, 511.

Lathrop. Am. Vet. Rev., 1888, XII, 225.

Lewin. Zeitschr. Veterinärk., 1910, XXII, 455. Abst. Berlin. Tierärzt. Woch., 1912, XXVIII, 567.

MacLachlan, W. W. G. Journ. Med. Res., 1914, XXIX, 433.

Martin. Vet. Record., XXIII, 634.

Mettam. Vet. Journ., 1909, LXV (N. S. XVI), 601.

Mulvey. Vet. Record, XVIII, 614.

Nicholas. *Journ. d. Zoötech.*, 1905. *Abst. Am. Vet. Rev.*, 1905, XXIX, 326.

Peters. *Vet. Journ.*, 1909, XLV (N. S. XVI), 453.

Petit, Douville et Germain. *Bull. d. l. Soc. Cent. Abst. Am. Vet. Rev.*, 1912, XLII, 228.

Pickens, E. M. *Journ. Am. Vet. Med. Assoc.*, 1919, LII, 707.

Piettre, M. *Compt. Rend. Acad. Sci.*, 1911, CLIII, 785.

Remond. *Rec. D. Med. Vet. Abst. Am. Vet. Rev.*, 1911, XL, 801.

Roberts. *Vet. Record. Abst. Am. Vet. Rev.*, 1909, XXXVI, 65.

Rogers. *Am. Vet. Rev.*, 1884, VIII, 264.

Rossignol. *Bul. d. l. Soc. Vet. Prat. Abst. Am. Vet. Rev.*, 1914, XLV, 353.

Sammon. *Journ. d. Zoötech. Abst. Am. Vet. Rev.*, 1913, XLIV, 255.

Schultz, O. T. *Journ. Med. Res.*, 1912, XXVI, 46.

Scott. *Vet. Journ. LXVII (N. S. XVIII)*, 1911, 547.

Seddon, H. P. *Vet. Journ.*, 1916, LXXII, (N. S. XXIII), 46.

Spreull, A. Sr. *Vet. News. Abst. Journ. Am. Vet. Med. Assoc.*, 1918, V, 346.

Szilly, von A. *Arch. Mieros. Anat.*, 1911, LXXVII, 87.

Taylor. *Vet. Record.*, 1916, XXIX, 248.

Wooldridge. *Vet. Journ.*, 1908, LXV (N. S. XVI), 454.

Young. *Vet. Record.*, XXIII, 706.

Ziegler, E. *General Pathology*, 1908, 11th Ed. 405 and 433.

(*To be Continued.*)

RELATIONSHIP BETWEEN THE VETERINARIAN AND THE COUNTY AGENT.*

By DEAN COOPER
Kentucky Agri. Expt. Station.

Since the establishment of the policy of forwarding the county agent movement by the agricultural colleges of the several States and the United States Department of Agriculture, and indeed before such a movement was initiated, questions have constantly arisen as to the relationship of the various staff members, as employed by the colleges and Department of Agriculture, to members of the various professions or business enterprises within the several states. It is not surprising that questions

* Paper presented at Kentucky Vet. Med. Ass'n.

have arisen. A new movement which has for its purpose the education of the people of a commonwealth must affect, to some degree, business enterprises or professions carried on by individuals. Questions that arise are not inherently difficult, but are complicated by the fact that persons may sometimes feel that their interests are seriously affected by certain phases of educational propaganda. To determine the relationship between the veterinarian and a member of any other profession or business and a county agent or member of the staff of an agricultural college, it is necessary to understand the ideals that have dominated the colleges and Department of Agriculture.

The agricultural college, as developed in the several states, is peculiarly an institution for service. It has been established, and its several branches of work developed for the purpose of enlarging the fund of information available in the agricultural field, and to further develop the application of such knowledge. This statement, to a degree at least, will also apply to the Department of Agriculture. *The functions and activities of the two organizations, namely, the college of agriculture and the Department of Agriculture, are interwoven to such an extent that the greatest number of the employees in the state are also the joint representatives of the Department of Agriculture, and hence represent the two institutions.

The legislative acts establishing the experiment station, which is a division of the agricultural college, specifically appropriate certain funds through the Federal Government, and prescribe "that it shall be the object and duty of said experiment stations * * * to conduct research * * * bearing directly on the agricultural industry." It is further prescribed that this information shall be available to the citizens of the state. Later, the so-called Adams Act appropriated sums from the Federal Government made to experiment stations to further research and experiment bearing directly on the agricultural industry of the United States. Following these appropriations, an era of activity, research and experimental work has developed in the various stations, many contributions to the various fields of agriculture have been made, comprising information from methods of maintenance of the soil to the treatment of certain animal diseases. For several years, during the development of experimental and research work, it has been found that the

placing of information before the people was insufficient to secure its rapid adoption, and that an educational force dealing directly with the application of fundamental knowledge to farm problems was necessary if we would bring about the rapid advance in agriculture that is advisable and necessary. Congress recognized the importance of making it possible to take direct to the farm and to the farm home all information along agricultural lines, and in 1914 passed the so-called Smith-Lever Act, which provides for coöperative extension work. It is under this act, and from funds appropriated by Congress, that the work of our extension division, county agents, specialists and others is carried on in this State. This act specifically states that "extension work shall consist of the giving of instruction and practical demonstration in agriculture and home economics to persons not attending or resident in such colleges in the several communities, and imparting to such persons information on such subjects through field demonstrations, publications and otherwise."

The field of agriculture and home economics covers practically everything which may affect the home or the farm. It naturally followed that when the Department of Agriculture and our agricultural colleges began to establish work under this act, through the county agents and specialists giving out various lines of information, it frequently affected, to an extent at least, certain enterprises that had been carried on by private citizens. To illustrate further: information in marketing, the necessity for grading and the proper handling of the wheat crop greatly developed the movement for coöperative farmers' elevators. The giving of information in carrying on the demonstrations as to methods of soil maintenance frequently affected the sale of certain classes of fertilizers. Similarly, the carrying of information to the farmer on the proper treatment of swine diseases and the use of hog cholera preventive serum, vaccination of cattle for blackleg with the necessary demonstrations that were conducted on the farm sometimes affected the practice of the veterinarian, with the result that in certain instances the veterinarian felt that the forces of the Federal Government and the states were combined to affect his profession. My own point of view is that the work of the county agent and of various federal employees bringing about a more general knowledge and use of the various

preventives, has done much to add to the practice of the veterinarian, and is being used to elevate his profession to a higher standard.

I have been told that in this State, questions have at times arisen as to the place of the county agent and as to the advisability of permitting him to demonstrate certain preventives and to give advice in certain phases of sanitation, animal disease work, etc. It is not the policy of the agricultural college through its extension division to permit the county agent, specialist or any member of its staff to compete with the veterinarian.

County agents have always been instructed that their work must be strictly educational, and that they should not in any way attempt phases of commercial work, nor should they lay themselves open to such criticism. However, the county agent is placed in a county to demonstrate to farmers every phase of information that may be of value to them. Farmers were advised that they could make use of anti-hog cholera serum and an act which was passed by the legislature required the Experiment Station to supply them with serum at 1 cent per cc. It naturally followed that when the county agent work was first started one of the first great problems attacked by the county agent was the loss from hog cholera. At that time very few farmers in the state believed in vaccination. It was, therefore, necessary for agents to carry on a tremendous number of demonstrations to show that this was an efficient method of disease control. I am pleased to say that in a few years, largely through the work of the county agent and of the staff of the Live Stock Sanitary Board, the opinion of the farmers as to the advisability of controlling this disease has been largely changed. Following this development of work in the state, county agents were instructed to teach farmers the value of the use of serum and to confine their activities to demonstrations to farmers where the farmers were unacquainted with the value of this treatment. As matters stand at the present time, when the county agents learn of an outbreak of a disease of any character, they inform the state veterinarian, and if they consider it advisable, also inform the extension veterinarian employed at the Agricultural College. One or the other of the organizations named offers assistance. Since the passage of the live stock sanitary bill this assistance

has largely been given through the Live Stock Sanitary Board or the state veterinarian.

I have stated the present policy and its development somewhat in detail with the hope that it may tend to eliminate some causes of misunderstanding. Perhaps the greatest source of misunderstanding, especially in regard to disease control on the part of the veterinarian, has usually arisen in cases of small farmers living some distance from town and owning but few hogs. Three or four hogs to this man are of as great importance as the one hundred hogs that may be owned by a more fortunate neighbor. When threatened with cholera, it is impractical for this man to pay the necessary mileage services of a veterinarian. He wishes to avail himself of the services of the county agent or of a neighbor who may be competent to administer the serum; and in this, either the agent or neighbor is very glad to be of assistance to him. This, however, represents a class of business that can in no sense of the word affect the practitioner. The same action will hold true in cases of blackleg and similar diseases that may be controlled, with information for such control readily available. It is my opinion that the development of county agent work has practically increased the prosperity of the practicing veterinarian. It has developed an interest in better grades and classes of live stock and more knowledge on the part of the farmer of the possibilities of preventive sanitation and the necessity for the proper maintenance of his animals. Consequently, he has been ready to avail himself of the services of the veterinarian, when in former years he did not consider it worth while. If the veterinarians of the state will participate in this forward movement, have a vision of its possibilities and rise to the occasion, they will find that a better agriculture and its rapid development is an aid in their business.

In conclusion, I wish to say that the work of our extension division in the Agricultural College is wholly educational. We do not administer regulatory measures. Our men are instructed, however, to give instruction as to methods of control of animal diseases that become epidemic. They may give lectures and demonstrations on the use of serum and are required to give information regarding the rules and regulations of the Live Stock Sanitary Board. When necessary, they organize the farmers for educational purposes in the control of disease.

It is the desire of the College that most friendly relationships shall exist between our agents, specialists, members of our staff and the representatives of the various professions and businesses in the state. We believe that our policies will assist in building up all legitimate industries and professions. Where questions arise, we are desirous of settling the problems in a manner that will appeal to all as just, or at least of presenting our point of view to the members of the profession that may feel aggrieved. We ask that you shall call upon us for help and assistance in your problems.

TYPHLITIS AND PERITYPHLITIS.

By OSCAR SCHRECK,
New Haven, Conn.

It is my intention in this paper to describe as far as possible a disease involving the cecum, and its loose connective tissue, and termed Typhlitis and Perityphlitis. I intend to direct your attention to a malady which affects and destroys small animal life to a far greater extent than some are aware, and which has been treated under many different designations. In support of this observation on my part, of which very little is found in our veterinary journals, or text books, I here allude to this subject on that account. Until you have met with a typical case, and perhaps been deceived by it, you will hardly believe how easily you might be led into making a false diagnosis. I will now proceed to discuss its etiology, symptoms, morbid anatomy, and treatment, as used and proved by me in such cases.

SYNONYMS: Catarrh of the cecum.

DEFINITION: The term typhlitis is restricted to an inflammation of the cecum, and perityphlitis as an inflammation of the loose connective tissue surrounding the cecum, occurring in the acute and chronic forms. Sometimes called also "Cæcitis," and accompanied in most cases by ulceration. It may be divided into Catarrhal, Ulcerative, and Interstitial forms, and is rarely of spontaneous origin.

ETIOLOGY: Standing clinically in close connection with inflammatory affections of the peritoneum, are disorders of the cecum and its surrounding tissues. The anatomical position of the pouch as a receptacle for the small intestines, the arrange-

ment of its muscular elements, and its abundant mucous folds, when empty, are properties necessary to its function, and at the same time causes disease of this organ of the small animals. There are also other special conditions affecting the cecum.

It may originate in the loose areolar tissue around the cecum; it may start in the cecum and spread from its peritoneal covering to the areolar tissue of the iliac fossa. Inflammation of the cecum in the small animals, however, is in the majority of instances caused by the accumulation of hardened feces, or in some cases by foreign bodies which have become impacted, from the size of a pea to a peach stone, which are sometimes of a waxy consistence and lustre, and for the most part fecal, and the secretions from the mucous surface. They may be multiple and may be present a long time without producing any noticeable harmful effect, the animal dying from other causes. The writer has in mind a case of typhlitis in a pointer with a fatal ending. Post mortem revealed sand and cement impacted in the cecum; and on further investigation found, in the yard to the rear of the factory next door, a mortar bed that had been in use a number of weeks, and learned that the animal had been seen drinking daily from this mortar bed. Hence the cause and the resultant findings. The same is true of foreign bodies, which do, of course, occur and include objects to be mentioned later, as causative factors. It may also be due to extension from neighboring parts, and by extreme distention of the cecum, resulting in atony of the intestine, and thus allow a large fecal accumulation that may be followed by ulceration of both the mucous and sub-mucous tissue. In some cases the perforation is in that portion of the bowel which is devoid of peritoneal covering. Fecal matter then escapes into the surrounding tissues, leading to more or less extensive inflammation and induration, and probably also the formation of an abscess. If the escape be but small in quantity, inflammatory swelling may alone take place, and after a while subside. The most frequent form of fatal typhlitis is no doubt that which results from perforation. An extension of the inflammation to the sub-mucous layer occasionally takes place, the connective tissue undergoes hyperplasia, a permanent increase of thickness results, and stenosis is an ultimate effect of the changes. It is only in the chronic form that such thickening and stenosis can occur. It is also due to

mechanical effects of bristles, pins, bones, wood, etc., which have been swallowed, or to the lodgment of intestinal concretions. Also the result of intestinal catarrh.

The cases which succeed the catarrhal or ulcerative form are, of course, characterized by the loss of tissue corresponding to the extent of the disease. As a predisposing cause must be considered certain influences, also, which were formerly regarded as exciting; such as overeating or overfeeding of the animal, especially of unwholesome or indigestible food; or gastric diseases from any cause, in addition to the foreign bodies and concretions already mentioned. Just how this takes place, however, is at present unknown. It may be from hyperemia or delayed circulation, similar to traumatic causes. More cases seem to occur during summer than in winter.

MORBID ANATOMY: Catarrh of the cecum may exist as a mere catarrhal affection of the mucous membrane, which soon involves the sub-mucous tissue, and when catarrh of the cecum exists, especially the chronic form, the hyperæmia and swelling are more decided in the neighborhood of the orifice. If general peritonitis supervene, there is added the usual anatomical appearances incident to this condition. The duration of typhlitis is necessarily very uncertain. Sometimes the animal speedily recovers and sometimes lingers.

SYMPTOMS: The symptoms of typhlitis are, in the first instance, pain, tenderness and swelling in the region of the cecum, together with signs of inflammatory fever and sometimes rigors. Sometimes the pain will be dull or of a distinct colicky character. Constipation is not infrequently present during the early period of the disease; while diarrhœa is apt to supervene at a later stage. But none of these symptoms has any particular uniformity of value; still I may say that constipation in a decided majority of cases from the beginning of the attack is present and diarrhœa often alternating with the constipation. In mild cases, uneasiness of the animal, followed by pain on palpation, and tenderness found to exist in the region just anterior to the crest of the ilium. The more decided the pressure, the more distinct the pain. Additional symptoms will be noticed when the animal is held erect, or straightened out, (standing on its hind legs). Inflammation of the loose areolar tissue around the cecum presents much the same symptoms and signs. This

perityphlitis is, in truth, frequently combined with inflammation of the cecum. Even where perforation has taken place, the matters may be retained in the neighborhood of the lesion, giving rise to circumscribed inflammation around the cecum, and to an abscess. Subsequently, the collection of pus may find its way into neighboring viscera or be discharged externally, when the ruptured intestine may heal; although sometimes the perforation remains open, and fecal matter is found oozing through the abdominal parietes. Vomiting is a symptom of more or less frequency. It is commonly regarded as reflex and at times is very severe. The matter vomited is first the gastric contents, with the evacuation of which the vomiting usually ceases. If the symptom is more prolonged, the vomited matter becomes greenish, and called bilious. The urine is scanty, as is usual in febrile conditions, and there is often an irritable bladder and frequent micturition. The expression of the animal varies with the severity of the symptoms, but seldom exhibits the anxiousness characteristic of peritonitis, unless the latter actually is present in consequence of perforation or rupture of abscess. As has been stated, there is always fever at the onset, the temperature 102, 103 F. and even 104 F., rarely higher in the dog, but may be seen higher in the cat. As a rule the pulse rate corresponds with the temperature, but its force and volume vary with the animal's strength. Should suppuration take place, the temperature continues with but a slight fall, or may in some cases rise higher. A sudden fall of temperature does not always mean the establishment of convalescence. Not very rarely the event has a widely different meaning. It means that, instead of convalescence, perforation has taken place. And it is extremely important that this fact should be realized. The functions of the alimentary canal are by no means necessarily disturbed to any great extent and is very important in diagnosis.

PROGNOSIS: In the simple form the prognosis in many cases is favorable; in the severe form it is grave, although recovery will ensue in a large proportion of the cases if the management is judicious. In the chronic form, when the connective tissue has become thickened, the prognosis as to cure is unfavorable. And in many cases in which the peritonitis is localized and intestinal perforation does not occur, recovery takes place.

TREATMENT: The treatment of typhlitis is in principle, and indeed in most of its details, the same as that of enteritis and other forms of ulceration of the bowels. It consists mainly in keeping the bowels quiet, which I know is contrary to the teaching of some, yet nevertheless I consider it of very great importance in the treatment of this disease. It consists mainly in keeping the bowels quiet by the aid of opium in some of its forms or derivatives, and in the employment of local applications. I wish to state it is almost more important in typhlitis than in any other affection to avoid the use of what is called by some opening medicines. If the bowels need to be relieved simple enemata are the safest means for the purpose, and usually are sufficient. When free movement is obtained in this manner the canal should be kept quiet with opium for a few days. Different cases require different treatment, and in fact must be treated by the symptoms shown. The animal should be kept thoroughly under the influence of the narcotic. Morphine has answered as the best line of treatment from the writer's observations. It is better to combine atropine with the morphine, for greater security and increased therapeutical power. No absolute rule for quantity can be laid down, and I must say these kinds of cases will stand very large doses, but the decided effects of the morphine, as shown in the state of pupil, pulse, respirations, and the somnolence, should be steadily maintained. The fullest curative power of morphine is obtained from a quantity strictly within the limits of safety, and hence no risk need be had to obtain the best results. As a guide to the administration, it may be stated that one-fourth of a grain of morphine and 1/120 grain of atropine is enough for the first dose in a medium-sized dog. Of course the smaller the animal, the smaller the dose, and subsequently one-eighth grain of morphine and 1/200 grain of atropine every four, six or eight hours according to the effect.

If for any reason the hypodermic administration of morphine is not carried out, the next best mode is the rectal injection of the tincture of opium, and in fact, in some cases answers the object sought with the best results. As regards the quantity, the rule above given is proper; it is the degree and constancy of the effect which determine the amount, also the kind or breed of animal. If for any reason the rectal injection is objected to, or the organ is intolerant, as sometimes happens, the drug may be

administered by way of the stomach. Under this mode, especially the eat, the best preparation is the deodorized tincture, and to secure uniformity in action the preparation after an essay of the opium is altogether preferable by the writer. This corresponds in strength to laudanum: fifteen to twenty drops to the eat and small animals, while thirty to sixty drops to the larger animals may be the first dose and half the above amounts every two, three, or four hours succeeding, the quantity to be determined by the effect as already stated. This line of treatment with opium is best continued until the bowels are moved spontaneously or till the inflammation, temperature, and pain on palpation, subsides. The effects may be retained for several days; the writer has maintained the effects for ten days, with a complete recovery. As soon as the tenderness subsides, a saline laxative may be given, in a most cautious way. The most efficient and at the same time safe laxative is the old reliable sulphate of magnesia; and let me here state that you will find that this salt will be retained when other medicines are rejected by vomiting. If the vomiting is persistent, it may be relieved by milk and lime water (say three parts to one), also pellets of ice to lap, etc., but as a rule when the hypodermic injection is practiced vomiting is a more less pronounced symptom in many cases, excepting the eat and very small lap dogs. Good effects are also obtained from counter irritation by fomentations or diluted turpentine stupes, and hot bandages, when hot applications seem to be indicated by the attending veterinarian.

According to the writer's observation, however, in these cases, the external application of ice cold compresses is more efficient than warm applications. Iced stupes are often exceptionally responsive to your expectations and results, because it is converted into steam and rapidly conveys away extra heat, and also diminishes the quantity of blood in the vessels of the part. When doubt as to the diagnosis exists as to whether there is true Typhlitis or Perityphlitis, or painful distension of the bowels, turpentine may be administered with small doses of strychnine, say 1/60 to 1/200 grain; while turpentine may be applied iced locally. Do not give the animal under treatment turpentine enemas under any circumstances, as it may do more harm than good. Special symptoms such as vomiting, faintness, exhaustion, etc., require the treatment usually appropriate to con-

trol them. For the first, ice by the mouth and locally (externally) are useful; for failing strength of the animal, stimulants, local heat, hypodermic injections of strychnine, digitalis, etc., are valuable. Those animals which have suffered once from the affection are very liable to have a recurrence of the disease, and require care as to diet, exposure to cold, and other conditions likely to act injuriously. If the above outlined treatment fails to give the desired results, recourse may be had to the operation of laparotomy, but no rule can be laid down to meet all cases, that will aid in the selection of the proper time.

INSPECTIONS FOR INTERSTATE MOVEMENT OF LIVE STOCK.*

By J. S. GROVE,
Oklahoma City, Okla.

The inspection of live stock for interstate movement is a considerable part of the work of many veterinarians, especially those who are situated near the main lines of travel which lead to state boundaries. This service is essential because of Federal and state requirements governing the admission of live stock.

These requirements, which vary considerably, are imposed to prevent the spread or introduction of contagious diseases, such as glanders, cattle or sheep scabies, Texas fever, tuberculosis, hog cholera, foot and mouth disease, etc.

Inspections are also necessary to locate the origin of disease, in order that infected territory may be properly quarantined or policed.

It is, or should be, the universal custom to notify the proper Federal and state authorities whenever any contagious disease is found, either in transit or at the time of slaughter, so that all outbreaks may be promptly suppressed, thereby preventing the introduction of disease into uninfected districts and preventing losses which would be sure to occur in the absence of authoritative action to prevent the spread of contagion.

The business interests of the country at large expect and are entitled to protection from the losses resulting from animal plagues.

* Paper presented at meeting of Oklahoma State Vet. Med. Ass'n.,
June 30 and July 1, 1919.

The proper control of disease has a marked effect in the stabilization of values and the preservation of our live stock markets. Uncontrolled disease means uncontrolled markets and financial disaster to a countless number of people.

Some districts frequently find themselves overloaded with certain classes of live stock, while in others, perhaps a considerable distance away, there will be a shortage of such classes of stock and it is essential that facilities be provided and that the routes be kept clean for such interstate movements. Thus, in the state of Wisconsin, there is usually a surplus of dairy animals, while in parts of Texas there may be a surplus of unfinished beef cattle and the ways must be kept open to move the surplus to points where it can be utilized or finished for market.

Likewise, during recent years we have witnessed the remarkable growth of the stock hog business, which is based on efficient veterinary inspection and immunization of the animals. There always appears to be a surplus of immature swine in Arkansas, eastern Texas and eastern Oklahoma and the proper inspection and handling of these animals is essential to the protection of the interests involved.

We sometimes hear of objections to having regulations governing the movement of live stock. These may be classed under three heads, as follows:

1. Trouble or annoyance;
2. Expense;
3. Perfunctory or worthless inspections.

Regarding the first objection, it must be admitted that, especially in this state, it is somewhat annoying to send long distances for a qualified inspector, especially when the owner is practically certain that no disease will be found. This objection will be gradually overcome as the country becomes more thickly settled and competent practitioners more numerous.

The matter of expense is always an objection, especially to persons who have little or no conception of the reasons for quarantine regulations and the vast volume of business involved. The expense can sometimes be lessened by having inspections made en route.

Practitioners should make their charges reasonable and be able to explain that while no disease may be found, it is only by

the exercise of ceaseless vigilance, by veterinarians everywhere, that outbreaks of disease are discovered at the start and that control is thereby made possible; and while the expense is a burden, it is by the exercise of such vigilance that your clients' herds have been protected from disease.

It is not many years since many of our states were quarantined on account of sheep and cattle scabies, but these quarantines have nearly all been lifted, as the result of constant and careful inspections and treatments.

While the payment of a fee may be a hardship, it is a small matter as compared to the loss which would result from uncontrolled epizoöties.

Perfunctory or worthless inspections are acts which bring the profession into more or less disrepute.

We hear of various shortcomings in this respect, such as neglect to take sanitary precautions when testing or vaccinating, writing certificates without seeing the animals, neglect to take the required number of temperatures and neglect to take temperatures at proper times, lack of information regarding state requirements and improperly prepared certificates.

It is not uncommon to find certificates which are only partially filled out so that one is unable to tell whether the inspector was certifying to horses or cattle. Each inspection should include:

1. A careful physical examination of the animal with a view to detecting communicable disease, such as glanders, tuberculosis, hog cholera, scabies, Texas fever.
2. Whenever a tuberculin or other test is required by the state to which the stock is destined, or by Federal regulations, such test should be properly made, although as sometimes occurs, the owner wants only the certificate and not the inspection.
3. Certificates should carry an accurate description of the animals. Note the breed, age, color, markings, brands, tattoo marks, whether polled, horned or dehorned, scars or blemishes. Make the description as definite as possible, so that the certificate will apply to one animal only. Do not describe an animal simply as "One Holstein Cow," but try to find some additional characteristics, so that a stranger could select the animal which is being certified.

Where a number of animals are consigned to a sale it would save the owner some annoyance if a separate certificate be made for each animal so that the certificate can go with the animal to its final destination.

Instruct shippers and railroad men to attach the certificate to the waybill which accompanies the stock.

We sometimes examine waybills which bear the notation, "Health certificate on file." A certificate which does not accompany the animal is useless.

In case of doubt as to state requirements get the necessary information from the various state live stock sanitary officials by mail or wire as may be necessary.

Always remember that it never pays to make a false or misleading certificate. The client who requests you to insert a false temperature record will be among the first to condemn you or your fellows whenever a question of professional integrity is involved.

Shipments of horses and mules for Canada must be given the mallein test by a veterinarian registered with the Bureau of Animal Industry. There are only five or six such parties in this state. Shipments of cattle for Canada must be accompanied by a B. A. I. certificate and tuberculin test chart. Neglect to observe this may delay the stock at the Canadian border for an indefinite time.

Effective July 1, 1919, regulation 7 to B. A. I. Order 263 becomes operative. This regulation requires that all cows and bulls intended for breeding purposes, except strictly range cattle, shall pass the tuberculin test before moving interstate.

Cows for feeding and grazing purposes and bulls for feeding purposes may be moved interstate without the tuberculin test, provided the owner or shipper will furnish an affidavit to the Bureau representative at a public stock yards, showing that the cattle are for feeding or grazing purposes only; however, such cattle can be shipped only to states the laws or regulations of which provide for the quarantine of such cattle through the feeding or grazing period and for their release only on written permit by the proper regulatory authorities.

Heifers (female cattle under 3 years of age and which have not given birth to young) shall not be moved interstate without

the test until the shipper certifies that they will be used only for feeding or grazing purposes.

Cattle consigned to a public stock yard, steers and strictly range cattle, may be moved without restriction.

Reactors may be shipped interstate for slaughter under Bureau supervision, but such cattle must be branded with the letter "T" on the left jaw or the letter "T" punched in the left ear or a B. A. I. "reactor" tag applied, and such cattle must not be loaded with healthy stock, unless the latter are for immediate slaughter only. Waybills must be properly marked and cars disinfected.

It is believed that the enforcement of this regulation will be a great aid in preventing infection and will be the means of locating infected herds. It is hoped that the practicing veterinarians will willingly coöperate in the enforcement of this regulation and it is apparent that their services will be required in an ever increasing measure as the work becomes better understood.

Your attention is directed to that part of the new regulation which states that when the cattle are destined to a state which recognizes the intradermal test the test chart shall show that the cattle have been observed at the end of the seventy-second hour and found free from any symptoms of tuberculosis.

When the subcutaneous method is used the chart shall show that at least 3 temperatures were taken 2 or 3 hours apart before injection of the tuberculin and that at least 7 temperatures were taken 2 hours apart after injection, beginning not later than 8 hours after the injection, and that the test ran for a period of not less than 20 hours after the injection.

In the case of cattle which are known to have been frequently injected with tuberculin the post temperatures should begin four hours after the injection.

It is the intention of the Bureau to recognize the tests which are made by practicing veterinarians, so long as they are properly made; and it is hoped that it will not be necessary to report any irregularities.

Dr. T. S. Leith, formerly of Ames, Iowa, is now located at Amerieus, Ga.

STUDIES ON ANTHELMINTICS.

V. THE ADMINISTRATION OF OIL OF CHENOPODIUM IN SOFT, OR SOLUBLE ELASTIC, GELATINE CAPSULES, AS COMPARED WITH OTHER MODES OF ADMINISTRATION.

MAURICE C. HALL, Ph.D., D. V. M., and MEYER WIGDOR, M. A., Research Laboratory, Parke, Davis and Company, Detroit, Mich.

Two of the very evident advantages afforded by the use of soft gelatine capsules are these: They furnish a convenient measured dose, and they supply a capsule with the advantages of the hard capsules (tastelessness), plus the advantage of saving bulk and bother, by combining the drug and the capsule, and the assurance that the capsule will not open in the mouth, pharynx or esophagus. They have proven entirely satisfactory in the administration of oil of chenopodium to experiment animals in our work here and have been recommended by one of us (Hall, 1917) for use in treating dogs.

The soft capsule, however, has recently been criticized as a container for oil of chenopodium, in a paper by Darling, Barber and Hacker (1918). They state that 3 10-minim doses of oil of chenopodium in soft capsules at hour intervals only removed 66.4 per cent of the hookworms from patients, as compared with the removal of 97.9 per cent of the worms by the same oil when removed from the capsule and then administered in freshly filled hard capsules. By way of explanation they state; "The soft capsules dissolved too slowly to permit their contents to affect the hookworms distributed in the duodenum and the upper part of the jejunum." Undoubtedly, this explanation is intended only as a plausible surmise. If the soft capsule digests or opens in the middle of the jejunum, it undoubtedly misses worms in the upper jejunum and duodenum, but there is some question as to whether it leaves the stomach unopened.

There are several ways of judging whether the soft capsule actually opens in the jejunum or in the stomach. One way is to determine the anthelmintic efficacy of chenopodium exhibited in the soft capsule and compare it with the efficacy of chenopodium exhibited in the hard capsules. Another way is to administer the soft capsules to dogs and kill the dogs after various intervals. We have here data of both sorts and these data do not sustain

the attitude taken by the writers quoted. So far as the application of findings in animal experiments to similar conditions in man is concerned, one must undoubtedly make the application with much care and some reservations. It is therefore impossible to insist too strongly that what we find true in the case of dogs is also true in the case of man, especially when the writers quoted find to the contrary. At the same time, there is something to be said for our experimental findings.

In the first place, our experimental findings are exact and definite, covering treatment, exact number of worms passed for the 4 or more days after the administration of the anthelmintic and up to the day of death of the animal, and the exact number of worms found post mortem. There can be no question but what the information obtained in this way is more exact than that obtained clinically and by examining the feces for parasite eggs, which method must be depended on by physicians working with human patients.

In the second place, hundreds of experiments show that the ascarid of the dog has a quite definite and dependable reaction to chenopodium, as Hall (1918) has noted, whereas hookworms in man or dogs have no such dependable reaction to any drugs, part of them yielding to one treatment and part quite commonly yielding only after 2 to 5 or more treatments. In judging, therefore, the fate of soft capsules of chenopodium, their results in the shape of ascarids removed from the dogs is a surer guide than that in the shape of hookworms removed from man and subsequent fecal examinations for eggs.

Finally, we have made a number of tests in the way of killing dogs at an interval after administering chenopodium in soft capsules and in other ways, and these tests show that the soft capsule does not wait until it reaches some point in the intestine before opening, but opens in the stomach. In this respect, our findings agree with the fact that our critical tests show that soft capsules of chenopodium display as high anthelmintic efficacy against ascarids as do doses of the drug in hard capsules or in castor oil. We have data on 220 dogs that have been given oil of chenopodium or its derivatives, alone or in combination with other anthelmintics, in castor oil, hard or soft capsules, or undiluted and without capsule, with records of all worms passed and worms present post mortem, and these experiments all testify

to the ascaricidal efficacy of chenopodium and bear out the statement that it is as effective when given in the soft capsule as when given in the hard capsule or any other way.

In this series of 220 dogs, there are only 8 that were given chenopodium in soft capsule, followed immediately with castor oil and not complicated by other considerations (enteric coats, other drugs, repeated doses involving more than 1 day, etc.) and these 8 dogs may be compared with the animals treated by Hall and Foster (1918). These writers gave chenopodium at the rate of 0.3 m. p. k. (mil per kilo) in castor oil to 8 dogs and removed 160 ascarids out of 162, an efficacy of about 99 per cent; they gave chenopodium in hard capsules at the rate of 0.2 m. p. k. with olive oil and castor oil on 3 successive days to 8 dogs and removed 15 out of 17 ascarids, an efficacy of 88 per cent. In our 8 experiment dogs, all of which were infested with ascarids, 4 dogs received the therapeutic dose of 0.1 m. p. k., 1 received a lethal dose of 1.0 m. p. k. with castor oil for protection, and 3 received doses between 0.1 and 0.2 m. p. k., all in soft capsules. These dogs passed 87 out of 87 ascarids, an efficacy of 100 per cent. In spite of the larger doses used by Hall and Foster, the efficacy secured by larger doses with their mode of administration is slightly inferior to that secured with smaller doses in soft capsules. They report that the dogs in the first series noted above had about one-fourth of their hookworms removed, and in the second series the treatment was ineffective for hookworm. In our series of dogs, 7 had hookworm; the treatment with soft capsules removed 23 out of 31, an efficacy of 74 per cent. In a series of 4 dogs treated by us with single doses of chenopodium, not in soft capsules, at the rate of 0.1 m. p. k. the treatment removed 10 of 10 ascarids, and none of 16 hookworms from 2 dogs; at a higher rate it removed 5 of 5 ascarids from 2 dogs.

So far as anthelmintic efficacy is concerned, accurate critical tests on both ascarids, a dependable form for test, and hookworms, a less dependable form, show that if there is any choice between the administration of oil of chenopodium in soft capsules or hard capsules or in castor oil or olive oil, the choice would lie with the soft capsules.

As regards the time and place of opening of the soft capsule in the digestive tract, a series of experiments was performed to furnish information on this point. The first set of tests were

with the soft capsules; the second set were with chenopodium administered in oil.

The first set of tests using the soft capsules may be summarized as follows:

Without purgative.

Dog No.	Capsules.	Dog killed.	Result, capsules.	Digestive tract.	Remarks.
251 3	5-minim	26 min.	In stomach; unopened.	Normal.	Food in stomach.
252 2	5-minim	42 min.	In stomach; unopened.	Normal.	Food in stomach.
253 3	5-minim	1 hr., 2 min.	In stomach; 1 opened, 1 cracked, 1 softened.	Normal.	Food in stomach.
254 3	5-minim	1 hr., 21 min.	In stomach; unopened.	Normal.	
354 3	5-minim	1 hr., 30 min.	Digested; chen. odor in stomach and small int.	Petechiae in stomach and small int.	
348 3	5-minim	2 hrs.	Digested; chen. odor in stomach.	Normal.	Food in stomach.
331 3	5-minim	2 hrs., 46 min.	Digested.	Gas. int. hem.	

With purgative.

(These dogs all received 3 5-minim capsules and the purgative shown.)

Dog No.	Purgative.	Dog killed.	Result, capsules.	Digestive tract.	Remarks.
328	Ol. ric. 30 mils	30 min.	Digested; chen. odor and ol. ric. near ileocecal valve.	Mild hyperemia.	
355	Cascarin 2 grs.	30 min.	In stomach; open and half digested.	Gast. int. petechiae.	
329	Ol. ric. 30 mils	1 hr.	Digested. Chen. and ol. ric. in stomach.	Normal.	
349	Calomel 2	1 hr.	Digested. Chen. odor in stomach.	Inflam. and hem.	Dog vomited fragments of capsule.
330	Ol. ric. 30 min.	2 hrs., 4 min.	Digested. Oil in large int.	Normal.	1 asc. pres. in large int.

It will be noted from an examination of the above tables, that when the soft capsules were given *without purgatives*, they were recovered from the stomach unopened as late as 1 hour and 21 minutes after administration; they were found opened in the stomach as early as 1 hour and 2 minutes after administration; and they were entirely digested at intervals of 1 hour and 30 minutes to 2 hours and 46 minutes. It appears, then, that soft capsules given without purgation will open in the stomach, and probably open from 1 to 2 hours after administration. This coincides with the time of onset of symptoms of salivation and vomiting in animals given chenopodium in soft capsules, where these symptoms appear. Chenopodium could be found in the

small intestine as early as 1 hour and 30 minutes after administration.

Where the soft capsules were given *with purgatives*, the time of opening in the stomach was materially shortened. As early as a half hour after administration, and after all longer periods, the capsules were partly or entirely digested, and chenopodium was detected near the ileocecal valve in 30 minutes in one instance.

It will be noted that in no cases were capsules found unopened in the intestine. When they were found at all, they were in the stomach: here they were found unopened, open, and partly digested: here the oil of chenopodium could be detected in almost all cases, as late as an hour after administration in the case of capsules given with purgatives, and as late as 2 hours after administration in the case of capsules given without purgatives.

Not only does all the evidence point to the opening of the capsule in the stomach, but other considerations sustain this idea. The soft gelatine capsule becomes very much softened by exposure to the moisture of the digestive fluids of the stomach, not to mention the digesting action of these fluids. Such softened capsules break very easily on pressure, and it seems likely that the pressure applied at the pylorus would break these capsules if they started to pass unopened. Possibly the early opening of capsules given with purgatives is due to increased gastric peristalsis and prompt rupture of the softened capsule, with digestion of the capsule hastened as a result. It is also possible that the purgative stimulates secretion of the digestive fluids.

Following up the foregoing experiments, some tests were made to ascertain the fate of oil of chenopodium given without capsule of any sort, with and without purgatives. To aid in following the course of the chenopodium, it was mixed with Eaton's fat-soluble blue. The doses were at the rate of 0.1 m. p. k.

Without purgative.

Dog No.	Dog killed.	Oil found.	Digestive tract.	Remarks.
318	47 min.	In stomach.	Normal.	
321	1 hr., 4 min.	In stomach and small intestine.	Petechiae in pyloric stomach; pylorus and duodenum hyperemic.	
319	1 hr., 45 min.	In stomach.	Normal.	

With purgation.

320	32 min.	In stomach.	Normal.	30 mils ol. ric.
322	1 hr., 4 min.	In stomach.	Normal.	30 mils ol. ric.
351	1 hr., 30 min.	In stomach.	Gast: hem., small int. hyperemic.	2 grs. cascariol. 1 asc. in int., apparently dead.
357	2 hrs.	In stomach.	Normal.	2 grs. cascariol.
352	2 hrs., 7 min.	In stomach.	Few hem. in int.	2 grs. calomel. 2 asc. in int., apparently dead. Fed before dosing. Vomited in hr. after dosing.

323 This dog was given the chenopodium with oil-soluble blue and 30 mils of castor oil, and $29\frac{1}{2}$ hours later the dose was repeated, this time with oil-soluble orange instead of blue. The dog was killed 2 hours and 12 minutes later. The orange-colored chenopodium was found in the ileum; there was no trace of the blue-colored chenopodium given the previous day. The ileum was mildly hyperemic.

In view of the fact that small amounts of oil, such as would slowly pass the pylorus, cannot readily be detected even when the fat-soluble coloring matter is used, one cannot affirm much as to where chenopodium was not present; one can only make affirmation as to where it was present. From the experiments tabulated above, we find that chenopodium given without purgatives or the use of capsules may still be present in the stomach 1 hour and 45 minutes after administration; when given with purgatives, without the use of capsules, it may still be present in the stomach 2 hours and 7 minutes later. We also find that even without purgatives, the oil may be in the small intestine in 1 hour and 4 minutes, and with purgation it may be in the ileum 2 hours and 12 minutes after administration, and the evidence of an apparently dead ascarid indicates that it may be there in an hour and a half. Doubtless it is in the small intestine earlier, as the experiments with capsules show.

The fact that the chenopodium in soft capsules, given with castor oil, may rapidly get to the small intestine, is perhaps due to the fact that the castor oil can exert its action at the start, unimpaired by the constipating chenopodium in initiating peristalsis.

The slowness with which the oil leaves the stomach confirms the position taken by Hall (1918) to the effect that anthelmintics, at least some anthelmintics, probably do not need to be allowed "time to act" on the worms before purgatives are administered. In this connection, Hall states:

"It is so generally believed and stated that anthelmintics should be allowed time to take effect before any purgation is attempted, that it seems almost unsafe to dispute the proposi-

tion. Dock and Bass even explain the failure of remedies to act effectively as possibly due to 'the rapid carrying down of the thymol by peristalsis to below the location of the worms', even in the absence of purgation. My own experiences have led me to fear more the absorption of the drug in the stomach before reaching the site of the worms. In over two years' experiment work, involving the treatment and post mortem examination of over 250 dogs, the results seem to be a little better, if anything, where the anthelmintic and the purgative are administered simultaneously than where the anthelmintic is allowed to precede the purgative by an hour or longer. Such combinations as oil of chenopodium and castor oil, chloroform and castor oil, santonin and calomel, etc., seem to be as effective as the ingredients of the combinations administered separately and at intervals. It is well known, of course, that such anthelmintics as areca nut are themselves purgative. Even if it were true that anthelmintics are more effective if purgation is postponed, and it can be shown that the patient is safer where the purgation is given with the anthelmintic, would it not be good practice to repeat a safe treatment oftener, rather than to give a less safe treatment fewer times?"

We are unable to reconcile the differences in the results obtained by Darling, Barber and Hacker and those obtained by us, as regards the value of the soft gelatine capsule of chenopodium, but we have no adverse comment to make on their results. We merely state our own results and indicate that there is a disagreement. There might have been some differences in the capsules used by them and the capsules used by us, and it might be that the capsules harden with age, though we have no evidence of our own on this point. The soft capsule can be hardened with formalin to the point where it will not digest, and there are other substances which will have the same effect.

Our findings further disagree with theirs on a number of other points which can only be mentioned here. For one thing, they found oil of chenopodium given in liquid petrolatum 88.7 per cent effective, while soft capsules were only 66.4 per cent effective, whereas we find that the use of liquid petrolatum cuts the anthelmintic efficacy, even against ascarids, to zero at times, while the soft capsules have an ascaricidal efficacy very close to 100 per cent. Experiments covering this point have

been published by Hall (1918) in a study by Hall and Hamilton (1918). Darling, Barber and Hacker state that "Chenopodium is relatively just as efficacious in removing *Ascaris*, *Clonorchis* and *Tænia*" as in removing hookworms. So far as the dog is concerned, hundreds of critical experiments show that chenopodium is unequaled for use against ascarids, and is a very inferior and undependable anthelmintic for use against *Tænia* and *Dipylidium*, removing them but rarely and showing no such efficacy as is shown by male fern or kamala. They prefer magnesium sulphate to castor oil as a purgative with chenopodium. This is a moot point which we will discuss in another paper.

CONCLUSIONS

On the basis of many experiments with dogs, we feel safe in saying that the following is true of dogs and that these findings apply in part to man:

1. The soft, or soluble elastic capsules of chenopodium open in the stomach and not in the small intestine.
2. The foregoing statement is sustained by the high ascariacidal efficacy of the soft capsules of chenopodium, as well as by their efficacy against hookworms.
3. The administration of purgatives at the same time as the soft capsules, hastens the opening of the capsules. Without the purgatives, capsules lie in the stomach as long as 1 hour and 21 minutes, and apparently digest in 1 to 2 hours. With the purgatives, capsules are wholly or partly digested in 30 minutes. Without purgatives, chenopodium from the capsules may be detected in the intestines in 1 hour and 30 minutes. With purgatives, chenopodium may be detected in the intestines in 30 minutes.
4. The more rapid opening of capsules given with a purgative is probably due to the mechanical action of heightened peristalsis on the softened moist capsule and to increased secretion of digestive fluids as a result of stimulation by the purgative.
5. Given in soft capsules, chenopodium may stay in the stomach as long as 1 hour and 45 minutes if given without purgatives, or 2 hours and 7 minutes if given with purgatives; or may be detected in the small intestine in 1 hour and 4 minutes if given without purgatives, or in 1 hour and 30 minutes if given with purgatives. It is probably present in the small intestine earlier.

BIBLIOGRAPHY.

Darling, Samuel T.; M. A. Barber; and H. P. Hacker. 1918. The treatment of hookworm infection. *J. Am. M. Assn.*, v. 70, Feb. 23, pp. 499-507.

Hall, Maurice C. 1917. Anthelmintic treatment for nematode infestations in dogs. *J. Am. Vet. M. Assn.*, v. 5 (3), pp. 342-345.

1918. A discussion of some principles of anthelmintic medication. *N. Orleans M. & Surg. J.*, v. 70 (8), Feb., pp. 637-653.

1918. The anthelmintic value of chenopodium components. *In Hall & Hamilton*, q. v., pp. 240-261.

Hall, Maurice C.; and Winthrop D. Foster. 1918. Efficacy of some anthelmintics. *J. Agric. Research*, v. 12 (7), Feb. 18, pp. 397-447, 1 fig.

Hall, Maurice C.; & Herbert C. Hamilton, 1918. Investigations on the composition of oil of chenopodium and the anthelmintic value of some of its components. *J. Pharm. & Exp. Therap.*, v. 11 (3), April, pp. 231-261.

THE RELATIVE POTENCY OF TAIL BLEED AND CAROTID BLEED ANTI-HOG CHOLERA SERUM.

EDWARD A. CAHILL, Indianapolis, Indiana.

It is quite generally agreed that after hogs have been hyperimmunized with hog cholera virus that the most potent anti-hog cholera serum is obtained if the animals are bled not sooner than ten days and not later than forty days from the date of hyperimmunization. The length of time which the circulating blood of such hyperimmunes retains its potency without the injection of additional antigen cannot be arbitrarily fixed since this has not been definitely ascertained. Some investigators have found that such blood is potent for several months. The experience of others indicates that potency is retained for more than a year even though the additional antigen be not given. The Bureau of Animal Industry of the United States Department of Agriculture regulates certain phases of this question in laboratories where anti-hog cholera serum is produced under United States Government License. Under Bureau regulations hyperimmune hogs may not be bled sooner than ten days nor later than thirty-eight days after hyperimmunization unless after that time the animal be rehyperimmunized. The same regulation requires

that such animals shall not be bled oftener than once each seven days.

It is not convenient to bleed swine from the larger blood vessels of the throat as is done in the case of most serum producing animals, unless the animal is to be bled to death. This is due to the fact that in swine these vessels are covered with heavy layers of fat and muscle.

Dorset, in his early work, found that the most satisfactory method of bleeding hogs, provided it was not desired that they be bled to death, was by severing the tail. He found that blood taken in this manner from the tails of hogs previously hyperimmunized in the proper manner was fully potent and would protect susceptible pigs against hog cholera.

This method, at first slow and cumbersome, was later improved by the use of a vacuum attachment which rapidly draws the required amount of blood from the exposed blood vessels.

After Dorset's discovery it was customary to bleed from the tail for a number of times after which the animals were bled to death from the carotid artery. Later, certain laboratories eliminated the tail bleeding and adopted the method of bleeding only from the carotid artery, the animals being bled to death. Those following this method have advanced claims of greater potency for serum obtained in this manner, at the same time maintaining that serum obtained from carotid bleeding preceded by tail bleeding has a lower potency and consequently a diminished protective value.

At the present time there are three methods of bleeding in general use:

1st. Carotid bleeding preceded by three tail bleedings seven days apart, all within a period of thirty-eight days from the date of hyperimmunization.

2nd. Carotid bleeding preceded by one tail bleeding seven days apart, both bleedings occurring within seventeen to twenty-one days from the date of hyperimmunization.

3rd. Carotid bleeding only. This is generally carried out from ten to fourteen days from the date of hyperimmunization.

A fourth method less frequently used consists of tail bleeding three or four times within thirty-eight days after which the animals are injected with more antigen and subjected to a second series of bleedings. Since each bleeding requires the sacrifice

of a section of the tail the animals are used until the caudal appendage has been entirely disposed of, after which they are bled to death.

Since the first two methods have been longer and in more general use than the third, and because of the claims presented by followers of the third method, it was decided to thoroughly investigate the relative value of each of the three methods with the idea of determining whether or not there was variation in the potency of serums obtained by the different methods.

A review of available literature developed the fact that little or nothing had been presented on the subject under consideration. Absence of reliable data made it seem advisable to conduct potency tests on sera obtained by the different methods above enumerated.

The first of the series of tests were conducted on sera from hogs which had been tail bled once followed by final or carotid bleeding seven days later. Ten serial lots of serum produced in the manner above described were tested in this manner, so that in reality ten tests were conducted. In each case the blood obtained from final bleeding was checked against that obtained from tail bleedings by injecting an equal number of susceptible pigs and comparing the protection afforded. The tests were conducted as nearly as possible to correspond with the regulation potency test prescribed by the Bureau of Animal Industry for the testing of anti-hog cholera serum. Under this regulation seven susceptible pigs are each given 2 cc of virulent hog cholera virus. Five receive 20 cc of anti-hog cholera serum each while the other two are left as controls to test the virulence of the virus injected into all seven. In order that the sera being tested could be properly compared ten pigs were inoculated with 2 cc each of virulent hog cholera blood. Four were given 20 cc anti-hog cholera serum drawn from the tail, as above described, while four were given 20 cc of anti-hog cholera serum obtained from the carotid bleeding, whereas two were left as controls. This scale applied to each of the tests conducted. In no case did the tests indicate a difference in the potency of the serum obtained by either method since the pigs were fully protected in all cases.

In view of the results above described it was deemed advisable to carry the investigation further. Two additional tests were, therefore, conducted, each test containing ten pigs and are described in detail under Charts Nos. 1 and 2.

CHART No. 1—TEMPERATURES AND VISIBLE SYMPTOMS
Time Started April 8, 1919.

Tag No.	Weight	Color	Sp. Gr.	Added Marks	Description	Dose	Day Inoculated	9	10	11	12	13	14	15	16	17	Day of Month
								1	2	3	4	5	6	7	8	9	Day of Test
Blood from first tail bleed	3552	R.B.	F.	R.	2	20	A.M.	2 ⁴	X	3 ²	X	4 ⁴	X	4 ⁸	X	4 ⁰	X
Blood from first tail bleed	3565	S.B.	M.	R.	2	30	A.M.	0 ⁰	X	3 ⁰	X	5 ⁴	X	2 ¹	X	4 ⁶	X
Blood from second tail bleed	3544	S.B.	M.	L.	2	20	A.M.	2 ⁴	X	3 ⁰	X	1 ⁴	X	2 ⁴	X	3 ⁴	X
Blood from second tail bleed	3550	B.W.	M.	F.L.	2	30	A.M.	3 ⁰	X	2 ⁴	X	2 ⁰	X	3 ⁰	X	1 ⁰	X
Blood from third tail bleed	3546	B.W.	M.	F.R.	2	20	P.M.	1 ⁴	X	3 ¹	X	2 ²	X	3 ⁴	X	3 ³	X
Blood from final bleed	3551	B.W.	M.	T.R.	2	30	A.M.	1 ⁴	X	3 ⁰	X	0 ⁴	X	2 ⁰	X	1 ⁶	X
Blood from final bleed	3537	B.W.	M.	R.	2	30	A.M.	0 ⁰	X	3 ⁰	X	3 ⁴	X	3 ⁶	X	3 ⁴	X
Blood from final bleed	3541	B.W.	F.	L.	2	20	P.M.	0 ⁴	X	3 ⁰	X	2 ⁰	X	3 ⁴	X	1 ⁶	X
Control	3539	S.B.	F.	R.	2	...	A.M.	0 ⁰	X	2 ⁰	X	6 ⁰	X	2 ⁰	X	5 ⁴	X
Control	3564	W.	M.	L.	2	...	A.M.	0 ⁰	X	3 ²	X	3 ⁴	X	5 ⁴	X	4 ⁴	X

×—On feed—healthy.
+—Slow, but not sick.

S—Sick.
K—Killed.

CHART No. 1—Continued.

		DESCRIPTION	DOSE		18 10	19 11	20 12	21 13	22 14	23 15	24 16	25 17	26 18	27 19	28 20	29 21	Day of Month Day of Test								
Blood from first tail bleed	3552	82 R.B.	F.	R.	2	20	A.M. A.M.	5 ^a X 2 ^a X	5 ^a X 2 ^a X	3 ^a X 2 ^a X	1 ^a X 1 ^a X	X—Slow, but not sick.													
Blood from first tail bleed	3565	96 S.B.	M.	R.	2	30	P.M.	—	—	2 ^a X 1 ^a X	K—Killed.														
Blood from second tail bleed	3544	112 S.B.	M.	L.	2	20	A.M.	1 ^a X 2 ^a X	4 ^a X 3 ^a X	S—Sick.															
Blood from second tail bleed	3550	100 B.W.	M.	F.I.	2	30	A.M.	2 ^a X P.M.	3 ^a X —	2 ^a X —	K—Killed.														
Blood from third tail bleed	3546	94 B.W.	M.	F.R.	2	20	A.M.	3 ^a X P.M.	3 ^a X —	2 ^a X —	S—Sick.														
Blood from third tail bleed	3551	92 B.W.	M.	T.R.	2	30	A.M.	4 ^a X P.M.	3 ^a X —	2 ^a X —	K—Killed.														
Blood from final bleed	3537	98 B.W.	M.	R.	2	30	P.M.	—	—	1 ^a X 2 ^a X	3 ^a X 2 ^a X	1 ^a X 2 ^a X	S—Sick.												
Blood from final bleed	3541	93 B.W.	F.	L.	2	20	A.M.	2 ^a X P.M.	1 ^a X —	K—Killed.															
Control	3539	93 S.B.	F.	R.	2	...	A.M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Control	3564	100 W.	M.	L.	2	...	A.M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

K—Killed.

S—Sick.

+—Slow, but not sick.

X—On feed—healthy.

AUTOPSY FINDINGS—Chart No. 1										
Tag No.	Date of Autopsy	Skin	Glands	Bones	Lungs	Spleen	Stomach	Intestines	Kidneys	Bladder
3539	4/15	v	v	v	v	v	v	v	v	v
3564	4/15	v	v	v	v	v	v	v	v	v

v—Satisfactory lesions.

The animals listed on Chart No. 1 were all injected with 2 cc of virulent hog cholera virus. All serum and virus was injected intramuscularly. Pig No. 3552 received in addition to virus, 20 cc of blood obtained from the first tail bleeding of animals which had been hyperimmunized ten days previously. Pig No. 3565 received 30 cc of the same blood. Pig No. 3544 received 20 cc of blood obtained from the second tail bleeding from the same hogs that were used in the first tail bleeding. Pig No. 3550 received 20 cc of the same blood. Pig No. 3546 received 30 cc of blood obtained from the third tail bleeding from the same hogs. This bleeding was conducted one week after the second tail bleeding. Pig No. 3551 received 30 cc of the same serum. Pig No. 3537 received 30 cc of blood which was obtained when the animals were bled to death from the carotid artery one week after the third tail bleeding and thirty-two days after hyperimmunization. Pig No. 3541 received 20 cc of the same blood. Pigs Nos. 3539 and 3564 received no serum and served to act as controls on the virulence of the virus used. The control pigs sickened promptly. They were marked "sick" (S) on the sixth day and were killed on the seventh day. Autopsy showed lesions of acute hog cholera and the absence of other disease. Pig No. 3544 was marked "slow" (X) on the seventh day of test because of an intestinal disturbance; the temperature on that day was 3.8. On the eighth day this pig had returned to normal and remained so throughout the test. Other than this the animals all remained perfectly healthy throughout the test showing no physical symptoms of any disease and were not off feed at any time. There were some slight fluctuations in temperatures, but it will be noted that these were rather uniform and not of any more significance than the thermic fluctuations which frequently appear in any test.

Tag No.	Color	Sex	Added Marks	Dose	Description	Day Inoculated	9	10	11	12	13	14	15	16	17	Day of Month
							1	2	3	4	5	6	7	8	9	Day of Test
Symptoms																
Blood from first tail bleed	3523	100	S.	M.	R.	2	20	A.M.	2 ^a	X	3 ^a	X	1 ^a	X	3 ^a	X
Blood from first tail bleed	3531	94	S.	F.	L.	2	20	A.M.	2 ^a	X	3 ^a	X	3 ^a	X	3 ^a	X
Blood from second tail bleed	3522	99	B.S.	F.	R.	2	20	A.M.	2 ^a	X	2 ^a	X	1 ^a	X	2 ^a	X
Blood from second tail bleed	3533	99	S.B.	F.	L.	2	20	A.M.	1 ^a	X	2 ^a	X	3 ^a	X	2 ^a	X
Blood from third tail bleed	3520	95	B.W.	M.	R.	2	20	P.M.	1 ^a	X	2 ^a	X	1 ^a	X	1 ^a	X
Blood from third tail bleed	3529	94	S.B.	F.	R.	2	20	A.M.	2 ^a	X	3 ^a	X	5 ^a	X	4 ^a	X
Blood from final bleed	3526	96	B.W.	M.	F.R.	2	20	P.M.	1 ^a	X	3 ^a	X	3 ^a	X	3 ^a	X
Blood from final bleed	3530	100	B.W.	F.	F.L.	2	20	A.M.	2 ^a	X	2 ^a	X	1 ^a	X	2 ^a	X
Control	3521	98	B.W.	F.	L.	2	...	A.M.	2 ^a	X	3 ^a	X	5 ^a	X	5 ^a	S
Control	3536	94	B.W.	F.	T.R.	2	...	A.M.	2 ^a	X	2 ^a	X	4 ^a	X	4 ^a	S
								P.M.	2 ^a	X					K	

X—On feed—healthy.
+—Slow, but not sick.

S—Sick.

K—Killed.

CHART No. 2—Continued.

		DESCRIPTION	DOSE	4	18	10	19	20	21	12	13	14	15	16	25	27	28	29	Day of Month
																			Day of Test
Blood from first tail bleed	3523	100 S.	M.	R.	2	20	A.M.	3 ^a	X	1 ^a X									
Blood from first tail bleed	3531	94 S.	F.	L.	2	20	P.M.	4 ^a	X	3 ^a	X	3 ^a	X	1 ^a	X	2 ^a	X	1 ^a X	
Blood from second tail bleed	3522	99 B.S.	F.	R.	2	20	A.M.	2 ^a	X	2 ^a	X	1 ^a	X	1 ^a	X	0 ^a	X	1 ^a X	
Blood from second tail bleed	3533	99 S.B.	F.	L.	2	20	P.M.	3 ^a	X	3 ^a	X	3 ^a	X	1 ^a	X	1 ^a	X	1 ^a X	
Blood from third tail bleed	3520	95 B.W.	M.	R.	2	20	A.M.	2 ^a	X	2 ^a	X	3 ^a	X	0 ^a	X	2 ^a	X	2 ^a X	
Blood from third tail bleed	3529	94 S.B.	F.	R.	2	20	P.M.	2 ^a	X	2 ^a	X	2 ^a	X	1 ^a	X	2 ^a	X	2 ^a X	
Blood from final bleed	3526	96 B.W.	M.	F.R.	2	20	A.M.	6 ^a	X	4 ^a	X	2 ^a	X	1 ^a	X	0 ^a	X	1 ^a X	
Blood from final bleed	3530	100 B.W.	F.	F.L.	2	20	P.M.	5 ^a	X	4 ^a	X	2 ^a	X	1 ^a	X	0 ^a	X	2 ^a X	
Control	3521	98 B.W.	F.	L.	2	20	P.M.	...		...		...		...		...		...
Control	3536	94 B.W.	F.	T.R.	2	20	P.M.	...		...		...		...		...		...

^a—Slow, but not sick.

K—Killed.

S—Sick.

Tag No.	Date of Autopsy	AUTOPSY FINDINGS—Chart No. 2								
		Skin	Glands	Bones	Lungs	Spleen	Stomach	Intestines	Kidneys	Bladder
3521	4/15	v	v	v	v	v	v	v	v	v
3536	4/15	v	v	v	v	v	v	v	v	v

v—Satisfactory lesions.

Chart No. 2.

This test consisted of ten pigs. As in the test described under Chart No. 1, all ten pigs received 2 cc of virus intramuscularly. The main difference between this test and that described on Chart No. 1 is that all pigs listed in Chart No. 2 which received serum were given 20 cc rather than one receiving 20 cc and the other receiving 30 cc. Pigs 3523 and 3521 received 20 cc of serum obtained from the first tail bleeding. Pigs 3522 and 3533 received 20 cc serum obtained from the second tail bleeding. Pigs 3520 and 3529 received serum from the third bleeding. Pigs 3526 and 3530 received serum from the final or carotid bleeding, while Nos. 3521 and 3536 received no serum and served to act as controls on the virulence of the virus.

It will be seen that the control pigs sickened on the sixth day and were killed on the seventh day. Autopsy showed only lesions of acute hog cholera. The animals which received serum showed no symptoms of sickness at any time during the test. They were marked "on feed" and were at all times during the test period of 21 days.

CONCLUSIONS.

The experiments presented in this article indicate that anti-hog cholera serum obtained by bleeding swine to death known as "carotid bleeding" is not more potent than serum obtained by carotid bleeding preceded by one, two or three tail bleedings.

The circulating blood of hogs properly hyperimmunized against hog cholera retains its potency without the injection of additional antigen for at least 38 days regardless of whether the animal is bled one, two, three or four times.

There is apparently no difference in the relative potency of the anti-hog cholera serum obtained from any of the four bleedings above described.

SPECIAL REPORT ON THE HISTO-PATHOLOGY OF GLANDERS.

By CAPTAIN HADLEIGH MARSH, V. C.

The following illustrations should have accompanied the paper by Captain Marsh which appeared in the October JOURNAL, page 40, but were not sent in until after the issue was mailed. At the request of the author, however, we are reproducing them in the November number.

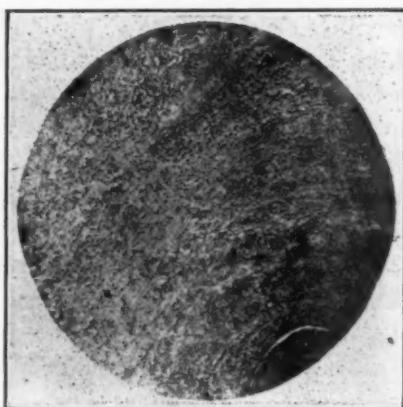


FIGURE 1.
Section through chronic glanders nodule in horse, Specimen No. 11. Low power.

The necrotic center is shown at one edge of the figure, with the different zones shown at one side of the center of the nodule. The connective tissue matrix is shown with the numerous eosinophiles appearing as black spots in the outer zone of the lesion.



FIGURE 2.
Sections through omentum of Guinea Pig 265, showing two acute glanders nodules, and relation to lymph channel shown running across the section.



FIGURE 3.

Low power view of acute glanders nodule in omentum of Guinea Pig 265. This is one of the larger nodules and shows an accumulation of eosinophiles at one side of the lesion.

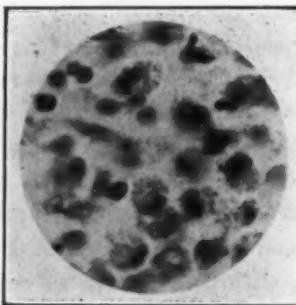


FIGURE 4.

High power view of small portion of nodule in omentum of Guinea Pig 265, showing eosinophiles.

Dr. B. M. Lyon, who for the past three years has been employed in the Lederle Antitoxin Laboratories of New York, has recently been made Assistant Director of the Veterinary Department under Dr. A. Eichhorn. Dr. Lyon for two years previous to his connection with the Lederle Laboratories was employed by the H. K. Mulford Biological Company.

Dr. Roy V. Rafnel, who for the past several years has been connected with the work of Tick Eradication in Louisiana, has resigned his position to accept that of Special Representative of the southern division for The Glidden Co., of Cleveland, Ohio, manufacturers of cattle dip and Insecticide. Dr. Rafnel's new headquarters will be New Orleans.

CLINICAL AND CASE REPORTS.

ENURESIS.

By OSCAR SCHRECK,
New Haven, Conn.

The patient, a Boston Bull, age two years, had suffered from enuresis since puppyhood, the sequel of distemper. On examination there was also evidence of slight choreiform symptoms present.

The animal received both local and general treatment by several veterinarians, but without relief, till the owner became discouraged and wished to have the animal destroyed. The urine would be passed every little while, but in small quantities. I obtained permission from the owner to try Naphthol in the following manner and results. A number 1 capsule was filled with naphthol (did not weigh the amount), and one such capsule given b. i. d. After 4 days the enuresis rapidly lessened. At the end of seven days the treatment was stopped, and there was a gradual return of the symptoms. Recourse was again had to the above drug, with the same results of gradual remission of the frequent micturition. The treatment was carried on for 14 days, and then again withdrawn, with no return of the enuresis. This report is made four weeks after stopping the treatment. The employment of naphthol did not, however, appear to exert any influence upon the choreiform symptoms. The above results go to show that further study into the action of this drug is needed.

AN INTERESTING CASE.

By W. M. BURSON,
Athens, Ga.

A six months old grade Percheron colt, an orphan since it was one week old, was being raised on cow's milk, pasturage and grain. It became rough coated, lost appetite to a considerable extent, would not graze but would eat green stuffs given to it fairly well. Spent most of its time lying down. The writer was called and upon examination found that the colt's feet were

grown out too long and were badly affected with thrush. Appropriate treatment consisting of shortening the feet to proper length, cleansing and disinfecting the decayed areas was applied. The colt improved and for several days was quite active and the appetite improved and the animal grazed quite well for about one week. This was followed by another period of decline. The writer was again called and upon making an examination of the feet found them nearly healed. The thrush was evidently not the cause of all of the trouble. A careful examination disclosed partially healed fractures of the 17th and 18th ribs on the left side at about their middle. A diagnosis of peritonitis was made. At this time the colt refused to stand except for a few minutes at a time and there was evident soreness of the abdominal wall, especially on the left side. Local and systemic treatment was applied, the object being to stimulate the appetite, build up the system and reduce the inflammation. At the end of one week the colt died.

Postmortem examination showed the fractured ribs nearly healed. The inflammatory zone surrounding the fractures was small and well circumscribed. The abdominal wall was badly inflamed throughout its entire depth over an area more than one foot in diameter. It proved to be heavily infested with strongyli (Palisade worm), twenty-five being taken from a section of abdominal wall three inches square.

A STUDY OF THE FECAL EXAMINATIONS OF 1000 IMPORTED DOGS.

MEYER WIGDOR, M. A.,
Junior Zoologist, Bureau of Animal Industry, Washington, D. C.

For a number of years, since January, 1911, the feces of imported dogs have been examined in this laboratory by various workers here, including Doctors Ransom, Hall, Graybill, and May, and by Messrs. Foster, Garlough, and Schwartz, and the writer. The findings have been summarized from time to time by Doctor Ransom in the Annual Reports of this Bureau, and were published in detail at an early date by Foster (1912).¹

The fecal examinations were in compliance with Order No. 176 of the Bureau of Animal Industry, November 25, 1910,

¹ Foster (1912). Analysis of the results of 87 fecal examinations of sheep dogs for evidences of parasitism. *Science*, n. s. (901), v. 35, pp. 553-554.

which requires that all collie or sheep dogs imported into this country be held in quarantine pending the results of a fecal examination. The object of the fecal examination is to prevent the importation into this country of such injurious parasites as the gid tapeworm and the hydatid tapeworm, parasites injurious to live stock and to man. These dogs are held in quarantine until fecal examinations have been made and the animals found free from dangerous parasites. Dogs are notorious carriers of parasites and it is obviously undesirable to complicate the present problems of eradication and the application of prophylactic measures by importing fresh supplies. If a preliminary fecal examination shows the presence of *Tænia* eggs or proglottids, suitable anthelmintics are administered to remove the parasite before the animal is released from quarantine.

Data are now available on the fecal examinations of 1000 imported dogs which have been examined from January, 1911, through July, 1919. The termination of the World's War gave a great impetus to this importation of foreign dogs into this country, as the men who had seen service abroad in our army brought back considerable numbers, especially of the German sheep dog.

Among the breeds of dogs imported, the various breeds of sheep dogs were most numerous. They included the Belgian, English, German, French, Russian, and Dutch sheep dogs. Collies were next in number and included the Scotch, Shetland, short-haired, and other breeds. German and Belgian police dogs were quite common and there were a limited number of wolf hounds.

In connection with these fecal examinations, the nature of the infestations with intestinal parasites is of interest. Of the 1000 dogs examined, 540, or 54 per cent, were negative on fecal examination. Of the 460, or 46 per cent, that were infested, 258, or 26.8 per cent, were infested with ascarids, of which there were approximately three times as many *Toxascaris limbata* as there were *Belascaris marginata*; 86, or 8.6 per cent, were infested with hookworm (probably *Ancylostoma canium* as a rule, but in some cases the species was probably *Uncinaria criniformis*); 15, or 1.5 per cent, were infested with whipworm (*Trichuris depressiuscula*); 36, or 3.6 per cent, were infested with *Dipylidium*; 152, or 15.2 per cent, were infested with *Tænia*; 1 or 0.1

per cent, were infested with flukes; 1, or 0.1 per cent, were infested with a larval nematode, probably *Hæmostrongylus vasorum*; and 1, or 0.1 per cent, were infested with a *Diphyllobothrium* sp. The dog infested with *Diphyllobothrium* was a Russian sheep dog and the worm on examination proved to be a different species than *Diphyllobothrium latum*.

Of the 152 dogs infested with tænioid cestodes, there were
68 infestations with *Tænia pisiformis*,
18 infestations with *Tænia hydatigena*,
15 infestations with *Multiceps serialis*,
1 infestation with *Multiceps multiceps*.

In 52 infestations with *Tænia*, the species was not determined.

Two dogs were infested with two species of worms, which accounts for the apparent total of 154 in this list.

The high percentage of dogs with negative fecal findings is perhaps associated with the fact that dogs valuable enough to import are usually well cared for and kept in cleanly surroundings. It is also true that a negative fecal examination is not entirely conclusive evidence of freedom from parasites. The absence of parasitic ova in the feces does not preclude the possibility of parasitic infestation, as many factors may account for the absence of the ova in the feces in spite of infestation. The low percentage of *Dipylidium*, hookworm, and the especially low whipworm infestation is interesting in view of the fact that 30 to 50 per cent of the dogs in most regions of the United States from which we have available data, are infested with these worms. While a majority of the dogs imported into this country are free from intestinal parasites, so far as fecal examinations show, the occasional occurrence of such parasites as *Multiceps multiceps*, is evidence of the need for the quarantine and examination of imported dogs.

A CASE OF SPINDLE-CELLED SARCOMA OF THE SKIN AND SUBCUTANEOUS TISSUES.

By B. F. KAUPP, Pathologist, N. C. Experiment Station, W. Raleigh, N. C.

Sarcoma is a disease of the connective tissue and consists of embryonic type cells. It is a malignant tumor and may affect the tissues of any of the organs of the body springing from the

connective tissue of the part. It may spread by contiguity of tissue or by metastases. The following is an interesting case.

History.—A Buff Orpington hen six years old and a member of the station flock. Has suffered from an opacity of the crystalline lense due to a cataract of the right eye. The bird is rather thin in flesh and on account of her age and having passed her stage of usefulness as a breeder was used as a bird in student fattening work. She did not make satisfactory gain in weight and on account of her heavy feathering the subcutaneous tumors not pushing out to any great extent, was not noted to be affected with tumors.

On April 2nd, 1919, she was selected for use in dry picking and boning work but after being killed and her condition being noted was sent to the pathological laboratory for further study.

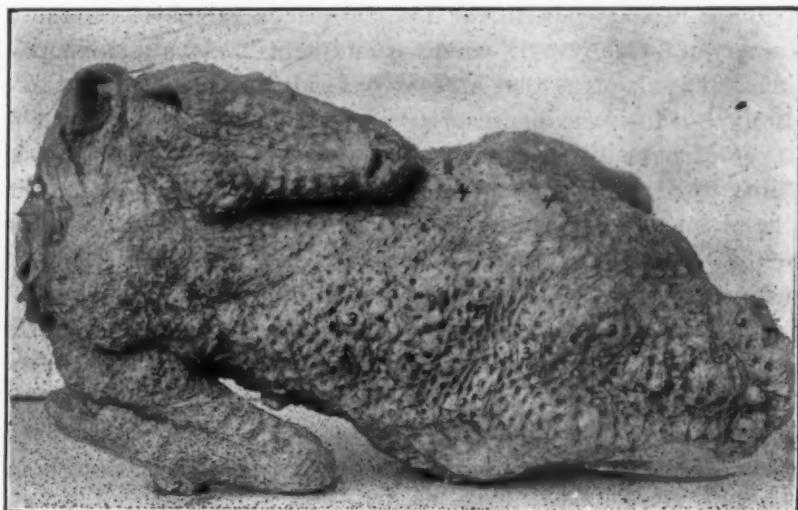


FIGURE 1.

Photograph of dressed carcass of a hen. Alveolar Sarcoma. 1. Tumors of shoulder region. 2. Tumors of the forearm. 3. Tumors of the dorsal region. 4. Tumors of the sides.

Autopsy.—As shown in Fig. 1, the back and to a less extent the sides of the bird were studded with subcutaneous tumors; 2 tumors on the pleural or inner wall of the thorax of the left side measured 4 mm. each in diameter. All the balance of the tumors were on the superficial portion of the body of the hen. One tumor near the shoulder of each wing measured 20 x 13 x 10 mm.; 2 in the region of the right forearm measured 7 mm. in

diameter; one in the region of the left forearm measured 12x12x6 mm. in a mass coalescing all along the dorsal portion from the level of the shoulder region to and involving the caudal region. This mass varied in thickness, being 12 mm. in the thickest portion. In the widest portion the tumorous mass was 6 cm. broad. The entire length of the mass was 18 cm.



FIGURE 2.

Photomicrograph of a Spindle Celled Alveolar Sarcoma. 1. Adult connective tissue forming alveolar wall. 2. Spindle cells cut transversely. 3. Spindle cells cut longitudinally.

There are no lesions of the internal organs. The tumors are closely associated with the skin with the exception of the two tumors in the left pleural region. On the sides of the carcass there are about 40 tumors varying in size up to 6 mm. in diameter. These tumors of the sides and upper tibial region were smaller and consequently considered younger tumors than those of the dorsal region. The tumors of the dorsal region are considered the primary tumors; those of the sides spreading by metastases while the primary tumor has also apparently spread by contiguity of tissue. There were no tumors involving the lower tibial region, the shanks or the feet, nor were there any tumors involving the head and neck. A few tumors varying from 3 to 4 mm. in diameter involved the lower chest region.

The tumors cut rather hard under the knife, indicating considerable of connective tissue.

Anatomical Diagnosis.—Malignant tumor.

Microscopical Study.—Specimens from three of the tumors; one from the shoulder, one from the middle of the back, and one

from the caudal region were saved for microscopic study. The specimens were hardened in 10 per cent. solution of formalin, dehydrated in alcohol; then alcohol and ether equal parts and embedded in parlodion and sectioned to 15 mm. in thickness. These sections were then stained in hematoxylon and eosin and clarified in oil of cedar, and mounted in natural balsam.

The section shows adult type connective tissue extending in various directions and in bundles making alveoli. These alveoli are filled with embryonic type spindle cells. In figure 2 will be seen at 1, the spindle cells, at 2 the spindle cells cut diagonally, at 3, the spindle cells cut transversely, and the adult connective tissue forming walls or alveoli in which the nests of cells are located. Looking at the nuclei from the side view or longitudinal view of the cell they are noted to be about twice as long as broad with rounded ends and rather large in size. In the cells cut transversely at the nuclear level the nucleus appears round. The tumors are surrounded with adipose tissue. The skin and subcutaneous tissues of the fowl is one of the normal storehouses of fat in the fowl. These cells are more of the embryonic rather than of the adult type of cells. The cells are tightly or closely packed in the alveoli.

Microscopic Diagnosis.—Spindle celled alveolar sarcoma.

These tumors have sprung from the subcutaneous connective tissue.

INVESTIGATION OF THE DEATH OF CHICKS. COCCIDIAN HEPATITIS.

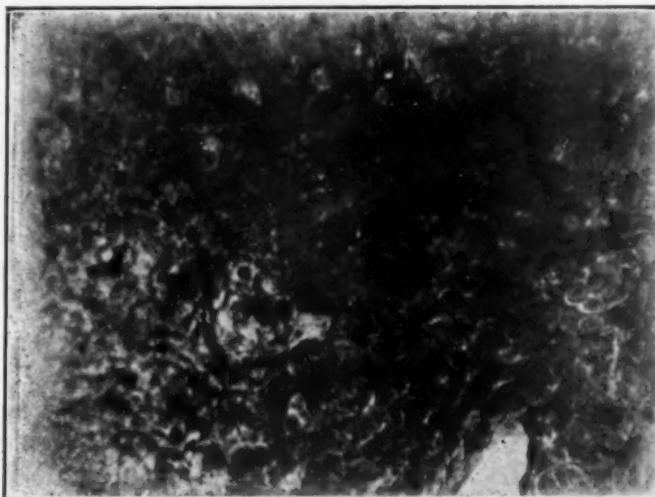
By B. F. KAUPP, Pathologist, N. C. Experiment Station, W. Raleigh, N. C.

HISTORY.

A flock of baby chicks about 3 weeks old are dying of so called sleeping sickness. The chicks mope about, do not eat, sit "hunched up" and sleep till they die. They are drowsy and stupid. They always die.

AUTOPSY.

In some of the chicks at autopsy there are no lesions. One chick showed necrotic-appearing areas of the liver. These areas were about one-fourth inch in diameter. Specimens were saved for microscopic study.



Photomicrograph of a section of the liver showing the coccidia indicated by the arrows. Note the double limiting membranes.

MICROSCOPIC STUDY.

In a study of sections, hardened in formaldehyde and imbedded in paraloid and stained with hematoxylon-eosin, zones around the necrotic areas showed active congestion, in a zone closer to the central area cells were in various stages of cloudy swelling, some nuclei showing piénosis, and in still closer zones the nuclei were scarcely visible and in fact were in a state of lysis. Finally the central mass was in a state of dead and disintegrating cells. The central areas were packed with oval double limiting membrane bodies and these have pushed their way more or less into and between columns of hepatic cells in the outer affected area. These cells are coccidia and the condition is that of coccidian hepatitis.

MICROSCOPIC DIAGNOSIS.

Coccidian hepatitis.

Dr. Claude Sevy has resigned his position with the Bureau of Animal Industry, where he was engaged in the work of Tick Eradication in Louisiana with headquarters at Morgan City, and has gone to Richfield, Utah, to engage in the sheep raising industry.

Dr. W. B. Van Cleave has entered practice at Chrisman, Ill.

ABSTRACTS.

PRESENCE OF AN ANTERIOR JUGULAR VEIN IN THE HORSE ACCCOMPANIED BY JUGULO-CAROTID ANEURYSMAL ANASTOMOSIS.

C. BRESSOU,

Rec. Med. Vet. Vol. XCV., No. 8. 30th April 1919. Bull. Soc. Centr. Med. Vet.
3rd April 1919. Pp. 147-154. 2 Figures.

In a horse in which the right and left jugular veins were present and normal, a large vein was discovered ventral to the trachea, covered and completely surrounded by the sternohyoid muscles. The accessory vessel took origin by two roots; one sprang from the external maxillary vein, and the other was a continuation of the sublingual vein. The vessel thus formed was connected by transverse anastomosis with the left jugular vein in the upper and lower fourths of the neck, and at the entrance to the chest it finally joined the left jugular.

The thyroid artery on the left side of the neck was represented by several vessels, two of which approached a slight dilatation of the supernumerary vein, and divided into very fine, flexuous arterioles. These opened into the vein and thus established an anastomotic relationship between the arterial and venous systems.

The author is of opinion that the accessory vein must be regarded as an anterior jugular, such as is present in the human subject.—*Vet. Rev.*

OSTEOPOROSIS OF THE HORSE IN THE BELGIAN CONGO.

R. VAN SACQUEHEM,

Bull. Soc. Path. Exot. Vol. XII., No. 5. May 1919. Pp. 228-243.

The author contends that rickets, osteomalacia, and osteoporosis arise from identical causes. He suggests, therefore, that there should be a common generic name to indicate all three conditions, and thinks that the term "osseous cachexia" is suitable. At the same time, there is no reason why the different manifestations of the affection should not be indicated. Thus, osseous cachexia of the young is "rickets;" osseous cachexia of the adult

is generally known as "osteomalacia;" while osseous cachexia of equines bears the distinctive name of "osteoporosis."

Osteoporosis of equines is very common in the Belgian Congo, and van Saceghem has sought for a cause in the amount of calcium content in soil and water. In those districts where the natural waters hold little or no calcium in solution (Lamba, Kitobola, Nyangwe) osteoporosis occurs; while it never appears in those regions where the natural waters contain calcium (Zambi).

The author, therefore, concludes that osteoporosis in the Congo is due to lack of calcium.—*Vet. Rev.*

OBSERVATIONS WITH REGARD TO THE ETIOLOGY OF JOINT-ILL IN FOALS.

SIR JNO. M'FADYEAN AND J. T. EDWARDS,
Journ. Comp. Path. and Therap. Vol. XXXII, No. 1. March 1919. Pp. 42-71.

The bacteriological findings in thirty-seven cases of joint-ill are given. The routine method employed was the withdrawal of part of the liquid from the joint cavity by means of a sterile pipette, and the use of the fluid so obtained for making films for microscopic examination and to serve as seed material for cultures. The joint was subsequently opened with boiled instruments. Four groups of organisms were discovered, namely, streptococci, *Bacillus nephritidis equi*, *Bacillus abortivo-equinus*, and coliform bacilli.

In twenty of the thirty-seven cases streptococci were the cause of the lesions. The morphology, staining reactions, capsule formation, cultural characters, sugar fermentation tests, agglutination tests, haemolytic properties, and pathogenicity, it was impossible to find any important differences among the joint-ill strains of streptococci, or between them and other streptococci isolated from cases of pneumonia, pleurisy or strangles in horses. So far as the authors are aware, *Bacillus nephritidis equi* has not previously been recognized as one of the causes of pyæmia and joint-ill in foals, or indeed described as occurring elsewhere than in South Africa. This organism was apparently the sole cause of disease in four cases, and it was present in three others in association with other diplococci or coliform bacilli.

Bacillus abortivo-equinus was the cause of disease in two of the thirty-seven cases. *Bacillus coli communis*, or organisms closely resembling it, were cultivated from joints usually in association with other bacteria, which were probably responsible for the lesions. But in four cases it seems probable that the bacilli were actually the cause of the disease. In morphology and cultural characters these strains resemble the colon bacillus, but cross agglutination tests indicated that they differ from a typical strain of *B. coli* supplied by the Lister Institute.—*Vet. Rev.*

OSSEOUS MELANOSIS.

Petit described this condition to the Central Society of Veterinary Medicine in 1914. If, in post-mortem examinations, the skeletal system is well examined, it is evident that osseous melanosis, microscopically recognizable, should not be considered as a rarity. The blood transports into the medulla, as into all other parts, not only melanin, but also sarcomatous cells which have become separated from their original seat, and which proliferate and develop in the ordinary fashion, but have less destructive tendencies towards the bony tissues than those shown by ordinary metastatic sarcomatous growths. Osseous melanosis therefore does not consist exclusively in a pigmentary infiltration of the medulla, realized up to a certain point by the detention and accumulation of fine melanic granules, as might be thought from the aspect of certain parts of the lesions. The process is frequently an active one in the sense that it is united with the transportation by the blood into the spongy cavities of the bone of the neoplastic cells themselves.

Vertebral Melanosis. In the horse, it is not rare to find the presence of voluminous sub-dorsal melanic tumours, or sub-lumbar ones, which may be recognized during life by rectal exploration. These tumours frequently spread into the rachidian canal, which they fill to a certain extent, englobing the nervous roots and more or less repulsing the duramater, which is not easily penetrated. This does, however, occur; and then the spinal cord itself is directly and dangerously englobed by the tumour. Numerous cases of paraplegia, occasioned by a lesion of this nature, have been observed in the horse.

At the same time as this propagation of the tumour into the rachidian canal, the vertebrae adjacent to the melanoma and englobed by it also become pigmented. This is not so much from contiguity of the tissues as from the deposition of either pigment or sarcomatous cells in the osseous tissue by means of the nutritive vessels.

In *costal melanosis* distinct types of invasion may be observed. Sometimes the pleura is covered with disseminated sarcomatous nodules, some small and others considerable, principally distributed opposite the intercostal spaces. These tumours may be black or grey, and are frequently conglomerated. The ribs are usually all invaded; and at certain points the pigmentary infiltration appears as clearly through the pleura as when seen in transverse section.—(*Revista de Higiene y Sanidad Veterinaria*).

W. R. C. in *Vet. Rec.*

NAMES OF ONTARIO GRADUATES WANTED FOR ROLL OF HONOR.

Principal McGilvray informs THE JOURNAL that the Ontario Veterinary College is arranging for a Roll of Honor for its graduates who served during the late war in the Imperial, Canadian and American Veterinary Corps. A fairly complete list of those who served with the Imperial and Canadian forces has been secured, but there were, doubtless, a large number of the college graduates who were members of the American Veterinary Corps, and the Ontario Veterinary College would be pleased to include their names in the College Roll of Honor if it were possible to obtain them. Consequently those desirous of having their names included in the Roll of Honor should send the same direct to the college in Toronto.

Dr. McGilvray further informs THE JOURNAL that it is the intention of the college to have a memorial tablet specially designed to commemorate the services rendered by members of the faculty, graduates and undergraduates, the design for which will be The Flanders Cross, a reproduction of which will likely be seen in a later issue of THE JOURNAL.

Dr. D. C. Beaver, formerly of Detroit, Mich., has accepted a position with the department of Veterinary Medicine of the University of Minnesota.

ARMY VETERINARY SERVICE.

FROM THE OFFICE OF THE SURGEON-GENERAL OF
THE ARMY, WAHINGTON, D. C.

OFFICERS, VETERINARY CORPS,
UNITED STATES ARMY.

	On Duty	
	September 11, 1919	October 11, 1919
Colonels	0	0
Lieutenant Colonels	5	5
Majors	47	43
Captains	90	77
First Lieutenants	187	167
Second Lieutenants	109	86
Totals	438	378

COMMENDATION FOR MAJOR McAUSLIN.

Headquarters 4th Division
Office of the A. C. of S., G.-1.

1 July, 1919.

From: Lt. Col. Wm. F. Robinson, Jr., A. C. of S., G.-1, 4th Division.

To: Commanding General, Third Army (attention Chief Veterinarian), through Commanding General, 4th Division.

Subject: Major R. A. McAuslin, Division Veterinarian.

1. Upon the eve of the departure of the 4th Division to the United States, I take the opportunity of bringing to your attention the Division Veterinarian, Major Robert A. McAuslin, V. C.

2. He is an officer of exceptional ability, extremely interested in his work, highly efficient, and absolutely loyal to his superiors and the service he represents.

3. Since the last of April, when the Division Remount Officer was relieved, Major McAuslin has done this work in addition to his other duties. Through his untiring efforts and ability as an organizer, the remount service has been highly developed and satisfactorily handled in this Division.

(Signed) WM. F. ROBINSON.

1st Ind.

Headquarters, 4th Division, American E. F., 1 July 1919.—
To Commanding General, Third Army (attention Chief Veterinarian). Forwarded.

1. Commendation of Lt. Col. Wm. F. Robinson, Jr., Concurred in.

(Signed) MARK L. HERSEY,
Major General, U. S. A.

The following officers have resigned from the Veterinary Corps during the past month:

Captain Oliver A. Barber, 1st Lieut., V. C., R. A.
Captain Joseph N. Graves, 2nd Lieut., V. C., R. A.
1st Lieut. Owen Howells, 2nd Lieut., V. C., R. A.

The following orders of transfer and reassignment have been issued for veterinary officers.

1. Lieut. Col. Gerald E. Griffin, U. S. A., now on duty at Atlanta, Ga., is relieved from station at that place and directed to proceed to Washington, D. C. for station in addition to his present duties relieving Major John P. Turner, V. C. of his duties as veterinary inspector for the Northwestern District.

Major Turner was honorably discharged from the Veterinary Corps on Sept. 29th, 1919.

1. Major R. M. Buffington, U. S. A., recently reported from overseas has been assigned as Camp Veterinarian, Camp Taylor, Kentucky.

2. Major W. V. Lusk, U. S. A., from Walter Reed General Hospital, Tacoma Park, D. C., to U. S. Military Academy, West Point, N. Y. as Post Vet'n.

3. Major B. A. Seeley, U. S. A., from U. S. Army General Hospital No. 1, Williamsbridge, N. Y. to Auxiliary Remount Depot, Camp Meade, as the Vet'n.

4. Major G. H. Dean, U. S. A., from Auxiliary Remount Depot, Camp Meade, Maryland to Chicago, Illinois, for instruction in meat inspection.

1. Captain C. E. Cook, V. C., from Camp Taylor, Ky., to Front Royal Remount Depot, Front Royal, Va., as The Vet'n and Purchasing Zone Vet'n.

2. Captain O. J. Conzelmann, V. C. from Ft. Robinson, Nebr., to Kansas City, Missouri for duty on horse purchasing board.

3. Captain J. F. Crosby, V. C. from Camp Knox, Ky. to Ft. Snelling, Minn., as Post Vet'n.

4. Captain J. E. Behney, V. C. from A. R. D. No. 329, Camp Travis, Texas, to Kansas City, Missouri for duty on horse purchasing board.
5. Captain P. T. Pedersen, V. C. from Chicago, Illinois to Philippine Islands for duty in that Department.
6. Captain B. C. Bridges, V. C. who has recently arrived from overseas to Ft. Keogh, Remount Depot, Montana.
7. Captain E. C. Conant, V. C. from Chicago, Illinois to Ft. Keogh Remount Depot, Ft. Keogh, Montana.
8. Captain J. H. Drayer, V. C. from A. R. D., Camp Jackson, S. C., to Ft. Ethan Allen, Vt. as Post Vet'n.
9. Captain D. J. Holton, V. C. from A. R. D., Camp Lee, Va., to A. R. D., Camp Travis, Texas.
10. Captain C. S. Parker, V. C. from Camp Dix, N. J., to Camp Dodge, Iowa, for duty with the 4th Division.
11. Captain R. P. Kunnecke, V. C. from 1st Division, Camp Meade, Md., to Ft. Keogh, Remount Depot, Ft. Keogh, Montana.
12. Captain C. L. Miller, V. C. from 1st Division, Camp Meade, Md., to Camp Dodge, Iowa, for duty with the 4th Division.
13. Captain R. H. Glenn, V. C. from 1st Division, Camp Meade, Md., to Camp Gordon, Ga., for duty with the 5th Division.
14. Captain W. H. Dean, V. C. from Camp Pike to Chicago, Illinois for instruction in meat inspection.
15. Captain Gordon B. Huse from duty as Camp Vet'n, Camp Lee, Va., to 15th Inf. Brigade, Camp Meade, Md. for duty with the American Forces in Germany.
16. Captain F. R. Harsh, V. C. from duty as Camp Vet'n, Camp Shelby, Miss., to Camp Lee, Va., as the Camp Vet'n.

Dr. E. Pegram Flower, Louisiana Live Stock Sanitary Board, and Dr. R. V. Rafnel, B. A. I., Baton Rouge, La., attended the First Conference on Tuberculosis Eradication in Chicago, in the early part of October.

Dr. H. A. Burton has been transferred from the work of Tick Eradication in Louisiana to the same class of work in North Carolina.

Dr. Ray Kelly, formerly of Knob Noster, Mo., is now located at Arkadelphia, Ark.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

FIFTY-SIXTH ANNUAL MEETING OF THE A. V. M. A.

THE JOURNAL is in receipt of the program for the fifty-sixth annual meeting of the American Veterinary Medical Association which will be held in New Orleans November 17 to 21; headquarters, Grunewald Hotel.

A careful study of the program will show that a greater number of subjects are to be discussed than perhaps ever before undertaken in the history of the Association. The topics are practical and pertain to those subjects which we are compelled to deal with at the present time.

The local committees have had much to contend with, but feel that they have fulfilled their obligations and assure those who will attend that they are more than welcome to the Crescent City. Many little details are still being looked after and if you do not arrive before Saturday, November 15, you will see three sides of the Grunewald Hotel decorated in red, white and blue; notably, red lettering on white back-ground, and the blue cross to distinguish the profession.

A program and entertainment has been provided for the ladies which should make them happy and contented. The Ladies Auxiliary can have the use of Room E on the Mezzanine floor for frequent meetings and it is sincerely hoped they will arrange for a committee to confer with the officers of the Association and local committeemen from time to time in order that all information in regard to entertainments may be uniformly understood.

In the main lobby of the hotel opposite the registration desk will be an A. V. M. A. information booth in charge of a competent Louisiana French lady who will be a fountain of knowledge concerning New Orleans. If you are lost and want to know where you are just ask her and she will make you think you are safe at home surrounded with hundreds of good friends and not a single thing to worry about.

OFFICERS AND COMMITTEES, 1918-1919.

V. A. Moore, President, Ithaca, N. Y.
A. Eichhorn, First Vice President, New York, N. Y.
H. B. Cox, Second Vice President, Philadelphia, Pa.
Geo. H. Hart, Third Vice President, Berkeley, Cal.
Thos. E. Smith, Fourth Vice President, Jersey City, N. J.
J. B. Hollingsworth, Fifth Vice President, Ottawa, Can.

EXECUTIVE BOARD.

Geo. Hilton, 1st District; T. E. Munce, 2nd District; S. E. Bennett, 3rd District; J. R. Mohler, 4th District; C. H. Stange, 5th District; R. A. Archibald, 6th District; A. T. Kinsley, Member at Large.

SUB-COMMITTEE ON JOURNAL.

J. R. Mohler, Geo. Hilton, R. A. Archibald.

COMMITTEE ON INTELLIGENCE AND EDUCATION.

Geo. W. Dunphy, Chairman; J. A. Kiernan, Cassius Way,
Geo. H. Hart, H. D. Bergman.

COMMITTEE ON LEGISLATION.

W. Horace Hoskins, Chairman; J. P. Turner, S. J. Walkley,
C. B. Palmer, F. A. Bolser.

COMMITTEE ON RESOLUTIONS.

C. A. Cary, Chairman; C. D. McGilvray, Chas. E. Cotton,
H. Jensen, Otto Faust.

AUDIT COMMITTEE.

H. K. Ryder, Chairman; L. Enos Day, W. H. Robinson,
C. G. Lamb, W. J. Martin.

COMMITTEE ON NECROLOGY.

J. W. Connaway, Chairman; R. W. Ellis, E. A. Cahill, J. B. Hollingsworth, G. F. Jungerman.

COMMITTEE ON HISTORY.

R. C. Moore, Chairman; A. L. Mason, U. G. Houck, C. H. Higgins, Geo. H. Berns.

COMMITTEE ON ANATOMICAL NOMENCLATURE.

H. S. Murphy, Chairman; S. Sisson, I. Ernest Newsom,
F. W. Chamberlain, Mark Francis.

COMMITTEE ON ARMY SERVICE.

Lt.-Col. C. J. Marshall, Chairman; Jno. R. Mohler, L. H. Howard, Lt.-Col. R. J. Stanclift, Maj. W. H. Lytle.

BUDGET COMMITTEE.

(Ex-Officio Membership).

V. A. Moore, M. Jacob, N. S. Mayo, Jno. R. Mohler.

SALMON MEMORIAL COMMITTEE.

J. F. Winchester, Chairman; W. Horace Hoskins, Secretary-Treasurer; J. S. Anderson, S. Brenton, David F. Fox, J. G. Rutherford, Jno. R. Mohler.

LIAUTARD MEMORIAL COMMITTEE.

Robert W. Ellis, Chairman; W. H. Hoskins, W. H. Dalrymple, W. H. Lowe, S. Brenton.

SECTION ON GENERAL PRACTICE (MEDICINE AND SURGERY).

A. S. Cooley, Chairman; John Harper, Secretary.

SECTION ON SANITARY SCIENCE AND POLICE.

L. Enos Day, Chairman; H. Preston Hoskins, Secretary.

INTERNATIONAL COMMITTEE ON BOVINE TUBERCULOSIS.

Fred. Torrance, Chairman; Jacob Traum, C. E. Schroeder, J. G. Willis, Chas. E. Cotton, J. J. Ferguson, Honorary Member c/o Swift & Co.

LADIES AUXILIARY.

President, Mrs. W. H. Hoskins.

Recording Secretary, Mrs. Chas. E. Cotton.

Corresponding Secretary, Mrs. Ashe Lockhart.

Treasurer, Mrs. H. B. Cox.

OFFICERS AND COMMITTEES OF THE LOUISIANA VETERINARY MEDICAL ASSOCIATION.

E. Pegram Flower, President, Baton Rouge, La.

E. I. Smith, Secretary-Treasurer, Baton Rouge, La.

COMMITTEE ON ARRANGEMENT.

E. I. Smith, Chairman; Thomas J. Hill, New Orleans Association of Commerce, W. H. Dalrymple, R. W. Tuck, E. P. Flower, A. W. Vornheder, J. Arthur Goodwin, J. R. Upton, F. J. Cambon.

COMMITTEE ON PROGRAM, BADGES AND ENTERTAINMENT.

F. J. Douglas, Chairman; Thos. J. Hill, New Orleans Association of Commerce, Hamlet Moore, Frank Collins, E. A. White, H. G. Patterson, D. H. McLean, F. S. Hewitt, Claude Sevy.

SUB-COMMITTEE ON FINANCE.

F. J. Cambon, Chairman; E. P. Flower, A. W. Vornheder.

PROGRAM.

MONDAY, NOVEMBER 17, 1919, 10 A. M.

Main Auditorium.

Called to order by President V. A. Moore.

Welcome on behalf of the State of Louisiana—Governor Ruffin G. Pleasant.

Welcome on behalf of the City of New Orleans—Mayor Martin Behrman.

Welcome on behalf of the Louisiana State Board of Health—Dr. Oscar Dowling, President.

Response—Dr. John Adams.

President's Address—Dr. V. A. Moore.

Presentation and Adoption of Minutes of Previous Meeting.

MONDAY, 1:30 P. M.—MAIN AUDITORIUM.

Report of Executive Board.

Election of New Members.

Report of the Secretary.

Treasurer's Report.

Editor's Report.

Reports of Committees.

MONDAY EVENING—PRESIDENT'S RECEPTION.

TUESDAY, NOVEMBER 18, 1919, 9:30 A. M.

Section on General Practice—Main Auditorium.

Intussusception of Intestines—Dr. J. N. Frost, Ithaca, N. Y.

Cæsarian Section in the Sow—Dr. J. N. Gould, Worthington, Minn.

Surgical Phases of Army Veterinary Work in France—Maj. George B. McKillip, Chicago.

TUESDAY, NOVEMBER 18, 1919, 9:30 A. M.

*Section on Sanitary Sciences and Police—Gold Room Mezzanine Floor. Symposium on Infectious Equine Anemia.
(Swamp Fever).*

Experimental Transmission of Swamp Fever or Infectious Anemia by Means of Insects—Prof. John W. Scott, Laramie, Wyoming.

Swamp Fever—Dr. Seymour Hadwen, Ottawa, Canada.

A Comparative Study of the Long Bones in Infectious Equine Anemia and Other Conditions—Dr. Lewis H. Wright, Reno, Nevada.

Changes in the Irregular Bones—Dr. L. E. Day, Chicago, Illinois.

Discussion:

Opened by Dr. C. P. Fitch, St. Paul, Minn., who will touch upon the geographical distribution, as well as certain pathological aspects of the disease.

Swamp Fever in the North—Dr. A. F. Sehalk, Agricultural College, North Dakota.

Swamp Fever in the South—Dr. E. M. Ranek, Agricultural College, Miss.

TUESDAY, NOVEMBER 18, 1919, 1:30 P. M.

General Session, Auditorium.

Report of Executive Committee.

Election of Officers.

Evening.

B. A. I. and College Alumni Meetings.

WEDNESDAY, NOVEMBER 19, 1919, 9:30 A. M.

General Session, Auditorium.

Reports of Committees.

Report Special Committee on Abortion Disease—Dr. A. Eichhorn.

White Scours or Calf Scours—Drs. W. L. Williams, H. A. Hogan, and C. M. Carpenter, Ithaca, N. Y.

Bang Disease or Abortion Disease; Its Handling by the Practitioner—Dr. J. F. Devine, Goshen, N. Y.

Heredity as Expressed by our Stallion Registration Laws—Dr. W. H. Welch, Lexington, Illinois.

Sheep Practice—Dr. E. T. Baker, Moscow, Idaho.

Ulcerative Lymphangitis—Dr. E. A. Watson, Lethbridge, Alberta.

Deficiency Diseases of the South—Dr. C. A. Cary, Auburn, Alabama.

WEDNESDAY, NOVEMBER 19, 1919, 1:30 P. M.
General Session, Auditorium.

The Army Veterinary Service.

The U. S. Army Veterinary Corps, Service of the Interior—Col. C. J. Marshall, Philadelphia, Pa.

The U. S. Army Veterinary Service in France—Col. H. E. Bemis, Ames, Iowa.

The British Army Veterinary Service—Col. D. S. Tamblyn, Regina, Sask.

The United States Army Meat Supply—Maj. Geo. Lytle, Chicago, Illinois.

Some Aspects of the Army Veterinary Corps—Dr. W. H. Hoskins, New York City; Discussion Opened by Col. D. S. White and Col. L. A. Merillat.

WEDNESDAY, NOVEMBER 19, 1919, 8:00 P. M.

The U. S. Army Veterinary Activities in the U. S. and Abroad—Films and Slides Supplied by Surgeon General's Office.

1. Veterinary Hospital, St. Nazaire, France.
2. Veterinary Hospital No. 6, Neuf Chateau, France.
3. Veterinary Hospital, Remount Depot, Givers, France.
4. Meat Inspection (Italian Beef), Port of New York.
5. Meat and Dairy Inspection, Chicago, Ill.

Lieut.-Col. R. J. Stanclift, assistant director of the Army Veterinary Corps and Major Robt. J. Foster from the office of the Surgeon-General, will represent the Army Veterinary Service at the meeting.

There will be an army exhibit of veterinary chests, official photographs, graphic charts and moving pictures.

THURSDAY, NOVEMBER 20, 1919, 9:30 A. M.

Section on Practice, Auditorium.

Impaction in the Horse—Dr. H. A. Trippeer, Walla Walla, Wash.

The Purpose and Scope of Veterinary Extension Work—Dr. L. C. Kigin, Lafayette, Indiana.

Additional Observations on Tuberculin Testing—Dr. W. H. Turner, New Hope, Pa.

Malignant Catarrhal Fever—Dr. T. E. Munce, Harrisburg, Pa.
The Occurrence of Epithelial Tumors in Domesticated Animals, Illustrated—S. A. Goldberg, Ithaca, N. Y.

THURSDAY, NOVEMBER 20, 1919, 9:30 A. M.

Section on Sanitary Sciences and Police—Gold Room.

Session devoted to topics of interest to B. A. I. Veterinarians.

Remarks: Early Days of the B. A. I.—Dr. V. A. Moore, Ithaca, New York.

Importance of Preparedness in Meeting Future Outbreaks of Foot and Mouth Disease—Dr. John R. Mohler, Washington, D. C.

Tuberculosis Eradication—Dr. J. A. Kiernan, Washington, D. C.
Meat Inspection and Its Value as a Safeguard to Public Health —Dr. R. W. Tuck, New Orleans, La.

The Sanitary Production and Handling of Milk—Dr. F. J. Cambon, New Orleans, La.

THURSDAY, NOVEMBER 20, 1919, 9:30 A. M.

Section on Veterinary Colleges and Examining Boards.

Dr. R. C. Moore, Chairman, Dr. C. D. Wall, Secretary.

THURSDAY, NOVEMBER 20, 1919, 1:30 P. M.

General Session, Auditorium.

Reports of Committees.

Session Devoted to Diseases of the South.

Economic Production of Hogs in the South—Prof. Dan. T. Gray, Raleigh, N. C.

Parasitic Diseases in their Relation to the Livestock Industry of the Southern United States—Drs. B. H. Ransom and M. C. Hall, Washington, D. C.

Poisonous Plants of the South—Dr. E. D. King, Mobile, Ala.

Tick Eradication in the South—Dr. E. I. Smith, Baton Rouge, La.

Strongylidosis in Horses and Mules—Dr. P. J. Orchard, Baton Rouge, La.

Some Carriers of Anthrax Infection—Dr. Harry Morris, Baton Rouge, La.

Some Diseases Peculiar to the South—Dr. W. H. Burson, Athens, Georgia.

Insects and Their Relation to the Production of Livestock and
Poultry—Dr. T. C. Bishop, Dallas, Texas.

Ladies Auxiliary, Room E, Mezzanine Floor.

Opening Prayer—Mrs. N. S. Mayo.

Address of Welcome—Mrs. W. H. Dalrymple.

President's Address—Mrs. W. H. Hoskins.

(Date and Time to be Arranged).

Committee Reports.

Intelligence and Education. International Committee on
Legislation. Bovine Tuberculosis.

Necrology. Anatomical Nomenclature.

Audit. Veterinary Reconstruction

Resolutions. Problems.

Budget. Committee on Veterinary

Special Committees: History.

Salmon Memorial. Committee on Liautard Me-

Army Veterinary Service. morial.

Unfinished Business.

THURSDAY EVENING, NOVEMBER 20, 1919.

Banquet.

FRIDAY, NOVEMBER 21, 1919.

Entertainment. The Association will be the guest of the
veterinarians of the South. Boat ride on the Mississippi river,
viewing New Orleans' extensive harbor; hour of departure to be
announced.

The following program has been arranged by the veteri-
narians of the South for the ladies:

MONDAY EVENING, NOVEMBER 17, 1919.

President's Reception.

TUESDAY AFTERNOON, NOVEMBER 18, 1919.

Trip about the City of New Orleans, visiting the French
Quarter and other places of interest.

WEDNESDAY AFTERNOON, NOVEMBER 19, 1919.

Card party and luncheon at the Southern Yacht Club.

LADIES AUXILIARY.

OFFICERS

President—Mrs. W. Horace Hoskins, New York City.

Recording Secretary—Mrs. Chas. E. Cotton, Minneapolis, Minn.

Corresponding Secretary—Mrs. Ashe Lockhart, Kansas City.

Treasurer—Mrs. H. B. Cox, Philadelphia.

PROGRAM

Opening Prayer—Mrs. N. S. Mayo, Chicago.

Address of Welcome—Mrs. W. H. Dalrymple, Baton Rouge.

President's Address—Mrs. W. H. Hoskins.

HOTEL RATES.

An unfortunate rumor seems to have gained currency among some members of the Association to the effect that the New Orleans hotels are given to charge extortionate rates during conventions or other large gatherings of people, and letters have been received by THE JOURNAL office making inquiry as to the truth of the rumor.

The matter was at once taken up with The Grunewald, which is to be the headquarters of the A. V. M. A. meeting, and the following is a copy of the reply received, by Dr. E. I. Smith, chairman of the local Committee of Arrangements, from the management of the Hotel:

"THE GRUNEWALD,

New Orleans, October 7, 1919.

Dr. E. I. Smith,
603 Roumain Building,
Baton Rouge, La.
Dear Doctor:

Very sorry indeed we were delayed in replying to your letter of September 26th. I cannot understand why there should be any uneasiness on the part of any of the members of your Association, in so far as rates are concerned. The rates as published in THE JOURNAL give the minimum charge. However, you can readily realize that this does not indicate that all our rooms rent at this price.

We had not quoted more than \$7.00 on any of our desirable double rooms with bath for two persons. This is not only in

keeping with the terms of other hotels, but under present conditions is a nominal charge.

I am very glad indeed that you gave us an opportunity to explain this condition, and if you have any other suggestions to offer, we will be pleased to hear from you.

Yours very truly,

THE GRUNEWALD,
(Signed) Geo. Webre, Manager."

A rumor of this kind permitted to go uncorrected would very probably have a prejudicial effect upon the attendance at the meeting, and it is hoped that the above information from hotel headquarters will entirely dispose of it.—W. H. D.

MEDICAL DELEGATES TO THE A. V. M. A.

Dr. Hector E. Bernadas, President of the Orleans Parish Medical Society, New Orleans, has appointed the following delegates to represent the Society at the New Orleans meeting of the American Veterinary Medical Association, November 17th to 21st, 1919: Drs. Paul J. Gelpi, W. H. Robin, W. H. Seeman.

UNDER PIER THREE WEEKS, ARMY HORSE LIVES.

When Captain E. A. Small, of the Bay Ridge Army Supply Base, Brooklyn, was walking on Pier 1 at the base he heard a horse neigh under the pier. Investigating he found standing on the pier beams an army mount that jumped into the bay three weeks ago.

The horse belongs to the First Division. It was to have been shipped to Washington to take part in the Pershing parade. After the horse was warmed and fed it was as spry as ever. The army authorities are mystified as to how the horse survived so long.—*From the New York American.*

Dr. B. C. Parker, who has been located at Kansas City, Mo., is now at Kodiak, Alaska.

Dr. H. W. Gardner, formerly of Oakland, Iowa, is now practicing at Creighton, Nebr.

Dr. John Enama has removed from Lake City, Minn., to Goodhue, Minn.

OTHER ASSOCIATIONS.

IOWA VETERINARY ASSOCIATION.

ANNOUNCEMENT.

The 32nd Annual Meeting of the Iowa Veterinary Association will be held in Des Moines, Iowa, at the new Hotel Savery 111, January 13, 14, and 15, 1920.

Arrangements are now well under way, and the officers are planning to make this meeting the best ever, which bespeaks something when the success of previous Iowa meetings is considered.

H. D. BERGMAN, Secretary.

KENTUCKY VETERINARY MEDICAL ASSOCIATION.

Dr. Harry Gieskemeyer, Secretary, sends THE JOURNAL a copy of the program of the Annual Meeting of the Kentucky Veterinary Medical Association, held at the University of Kentucky, June 18-19, and he reports that it was the largest and best ever held by the Association, there being practically every veterinarian in the State present.

The program contained the following topics for discussion: Differential Diagnosis of Swine Diseases and Treatment, by Dr. Harry Gieskemeyer, and was discussed by Drs. E. A. Cahill, Pitman-Moore laboratories; T. P. Polk, Assistant State Veterinarian of Kentucky; and Carl H. Beyer, Henderson, Ky.

Hog Cholera and the Swine Industry, by Dr. U. G. Houck, B. A. I.

Infectious Abortion, by Prof. E. A. Good, Ky. Agri. Expt. Station.

Value of the Stomach Tube in Treating Digestive Disorders, by Dr. Chas. H. Mainhart, Richmond, Ky. Discussion by Drs. Jas. B. Shannon, Lexington, Ky.; Geo. W. Pedigo, Glasgow, Ky.; and W. Boyd Robinson, Mt. Sterling, Ky.

There was also a live clinic, including Demonstrations and Technic of Hog Cholera Vaccination.

Secretary Gieskemeyer also favored THE JOURNAL with the manuscript of a paper on The Relationship between the Veteri-

narian and the County Agent, by Dean Cooper, Agri. Expt. Station, Lexington, which appears in another part of this issue of THE JOURNAL.

OREGON AND WASHINGTON VETERINARY MEDICAL ASSOCIATION.

The Oregon-Washington Veterinary Medical Association met in joint session at Taeoma, Washington, on August 7, 8 and 9. Headquarters were at the Hotel Tacoma. Both states were well represented and the meeting was one of unusual interest.

Doctor Wilson of the Board of Health of Tacoma welcomed the veterinarians to the city with a most timely address. Doctor J. W. Cook of Brownsville, Oregon, responded in his usual pleasing manner.

The first paper was by Doctor C. S. Phillips of Mount Vernon, Washington. It was entitled, "Obstructions of the Cow's Teat." Good results had followed surgical manipulation in about 50 per cent of his cases. This paper brought out a very good discussion. Several of the practitioners who are located in the dairy sections seem to think that the cow's teat can be manipulated surgically with better chance of favorable results than most veterinarians have believed in the past.

The next paper was by Doctor F. W. Miller of Corvallis, Oregon, on Laboratory Diagnosis. He emphasized the precautions which the veterinarian in the field must take in collecting and forwarding material in order to obtain optimum results from laboratory examination. From the discussion which followed it appeared that many of the men in the field are anxious for laboratory help, especially diagnosing hemorrhagic septicemia and diseases exhibiting similar symptoms.

Doctor W. G. Morehouse of Salem, Oregon, read a paper entitled "A Partial Paralysis in Cattle." He brought out the symptoms and results of treatment of cows which are affected with a disturbance showing some resemblance to parturient paresis. He attributed these cases to disturbances of the digestive system. Several other practitioners reported having treated somewhat similar cases.

The next paper was by Doctor E. E. Wegner of Pullman, Washington. It was entitled "An Analysis of 6500 Cases."

This was a critical analysis of a practice covering a period of 10 years. Doctor Wegner showed that a relatively small number of diseases make up the major portion of a practice.

Doctor R. G. McAllister of Corvallis, Oregon, read a case report "Amputation of the Penis in a Gelding." Possibly the most interesting point was the fact that the horse escaped from the stall after the operation and was not located for several days. When found he seemed to be doing so well that it was decided not to interfere with the wound in any way. The animal made a satisfactory and uneventful recovery.

Mr. Scott of the Marine Products Company gave a very interesting talk on fish meal as a food for cattle. The next paper was by Doctor C. J. Sandwith of the Bureau of Animal Industry on "The Attitude of the Bureau Man Towards the Practitioner."

Doctor R. J. Donohue, Chief of Division of Dairy and Livestock, State Department of Agriculture, Olympia, Washington, gave a very interesting talk upon legislation affecting veterinarians. He emphasized the fact that the practitioner is usually not in very close touch with the legislature when bills in which veterinarians are interested are introduced.

The next paper was by Doctor Clifford Ackley of Centralia, Washington. The subject was "Livestock Sanitation and the Public Health." This was very well received and a good discussion followed.

Doctor W. H. Lytle, State Veterinarian of Oregon, read a paper on "Mixed Infection of Cattle." He reported rather serious losses in some sections of Oregon from a disease that seemed to be the result of infection with the hemorrhagic septicemia group of bacteria combined with other organisms. This proved to be a very live subject. Many of the practitioners joined in the discussion.

The next paper was "Some Observations Concerning Abortion Disease" by Doctor B. T. Simms, Corvallis, Oregon.

On the night of August 8 a banquet was held in the Hotel Tacoma. Doctor E. E. Wegner was a most capable toastmaster.

The two associations decided to meet together again in 1920, selecting Portland, Oregon, as a meeting place. The date of the meeting was not definitely decided but it will very probably be some time during the first two weeks of August.

The following officers for the ensuing year were elected by the Washington association: Doctor Walter Ferguson of Goldendale, President; Doctor R. A. Button of Tacoma, Vice-President; Doctor Carl Cozier of Bellingham, Secretary-Treasurer. The new officers of the Oregon Association are Doctor Roy Smith of Eugene, President; Doctor W. B. Coon of Forest Grove, first Vice-President; Doctor C. M. Gardner of Portland, second Vice-President; Doctor F. W. Miller of Corvallis, third Vice-President; Doctor B. T. Simms of Corvallis, Secretary-Treasurer.

B. T. SIMMS.

GEORGIA STATE VETERINARY ASSOCIATION.

The thirteenth annual meeting was held in the parlors of the Tosco Hotel, Thomasville, Ga., on Sept. 18th and 19th.

It was the liveliest and best attended meeting in the history of the association.

The following program was carried out.

President's Annual Address, Dr. G. Darbyshire, Donaldsonville.

Secretary's report, Dr. Peter F. Bahnsen.

Recent Legislation and its influence on the Veterinary Practitioner, Dr. Darbyshire. This paper dealt particularly with the recent law passed by the Georgia Legislature authorizing and requiring the State Veterinarian to select and train a number of laymen in each county for the purpose of administering the simultaneous treatment for hog cholera, and after a period of training to issue permits to these men. The subject was discussed by Dr. Peter F. Bahnsen, Dr. W. M. Howell, Dr. R. M. Walsh and others. It was the consensus of opinion that this was a particularly vicious piece of legislation which should not have been permitted to be placed on the statute books. That it would likely seriously injure veterinary practice in many of the counties in which hog raising is important and very probably result in an increase in the losses from cholera and other swine diseases. On account of the fact that the bill was introduced from Lowndes County, the home of Dr. W. M. Howell, there was some effort made to place the responsibility for it upon the shoulders of Dr. Howell, who claimed absolute ignorance of the fact that such a bill was to be introduced until after it had been

introduced. Dr. Bahnsen, State Veterinarian, claimed that he made all efforts possible to defeat the bill, by having inserted into it a provision calling for an appropriation of \$40,000, which he hoped would result in its defeat. This, however, failed to defeat the bill.

Differential Diagnosis of Swine Diseases, by Dr. O. B. Hess, was next on the program. The paper was discussed by Dr. W. E. White, Dr. S. J. Rayfield, Dr. A. L. Hirleman, Dr. W. M. Burson and others.

This subject is one that has been popular at association meetings for some time and nothing new was brought out which would enable any one to draw a clear line of demarkation between Hog Cholera, Swine Plague, Infectious Pneumonia, Mixed Infections and Hemorrhagic Septicemia.

The Value of Bacterins in Swine Diseases, by Dr. C. Pedrick. Discussion by Dr. R. S. Duffel, Dr. D. L. Proctor, and others. Conflicting reports were made as to the results obtained through the use of bacterins. Several reported good results in stopping "breaks" following the simultaneous treatment.

This ended the program for the first day and was followed by a delightful barbecue and musical entertainment for the benefit of the veterinarians, tendered by Judge Roscoe Luke of the Court of Appeals at his beautiful and commodious home in the suburbs of Thomasville. Violin music by Dr. J. Goldbrown was an important feature of the evening's entertainment, which was thoroughly enjoyed by all.

The following program was carried out on the 19th:

"Regulations Governing Interstate Shipment of Animals," by Dr. W. W. Parrish. In the absence of Dr. Parrish this subject was handled by Dr. W. M. MacKeller, Inspector in Charge of Tick Eradication for Georgia. Information concerning new methods of certifying to shipments accompanied by certificate of tuberculin test was fully given, as well as explicit directions for the handling of other shipments.

"Intrastate Shipments" was discussed by Dr. P. F. Bahnsen, and especial attention called to Regulations Governing the Transportation of Hogs within the State of Georgia and the shipment of cattle from territory quarantined on account of tick fever.

"What's the Matter with the Cattle Practice" was the title of a paper by Dr. H. A. Romine. Discussions by Dr. J. W.

Salter and Dr. W. A. Downs. It was brought out that there was but little the matter with cattle practice in general but that on the other hand cattle practice was usually satisfactory. The most serious problem appeared to be in connection with hemorrhagic septicemia, "mad itch," "rubbing disease" and forage poisoning. There was considerable difference of opinion as to the cause and nature of the condition described as "mad itch" and "rubbing disease." Some believed it to be a form of hemorrhagic septicemia. Dr. Bahnsen advanced the idea that it is a cryptogamic forage poisoning. Dr. Burson offered the use of all facilities of the Veterinary Division, State College of Agriculture, in the efforts to be made to determine the true nature of the disease.

"The Relation of the County Agent to the Veterinary Practitioner" was the title of a paper assigned to Dr. W. M. Burson of the State College of Agriculture at Athens.

Dr. Burson announced that he was not a volunteer but had been drafted by the program committee to discuss the above subject. He explained the whys and wherefores of the establishment and maintenance of Agricultural Colleges and the reasons for the carrying on of agricultural extension work by the Federal Department of Agriculture, the State and County in coöperation. Briefly, that the function of the College is to aid the farmer to be more prosperous and to have a better home for himself and family and to help him in the increasing of production of food-stuffs and other agricultural products, that the nation might be fed and clothed. He called attention to the fact that irrespective of profession, men engaged in the work carried on by agricultural colleges must bear the fact in mind that the function of the college is to aid the farmer. He then read to the association a paper which he had read to a State Meeting of County Agents at the State College of Agriculture in January, 1918, entitled "The Work of County Agents in Dealing with Diseases of Animals." In this paper he brought out the point that there is much that county agents may do along this line without interfering with the veterinary practitioner. That as a rule the farmer overestimates the abilities of the county agent to deal with diseases of animals and that often the agent also overestimates his own abilities in this direction. He advised the agents to study anatomy and physiology of farm animals, read the Bulletins of the Department of Agriculture, State Colleges

of Agriculture and Experiment Stations, familiarize themselves with the symptoms of common diseases and parasitic diseases. Point out to the farmers the value of pasture rotation, sanitation, cleaning and disinfection and the proper disposal of carcasses. To inform farmers concerning the regulations of the State Veterinarian and State laws governing the control of animal diseases and the transportation of animals and to impress upon them the importance of the faithful observance of these laws and regulations. To aid, educationally, in tick eradication. To assume no authority along this line. To report to the State Veterinarian all new outbreaks of contagious diseases and to call upon the State Veterinarian for help when it was apparent that help was needed. To not undertake work which properly belongs to the practitioner and to strive to bring about a closer relationship between the farmer and local veterinarian, as a feature of the agent's educational work. To have nothing to do with the tuberculin test or simultaneous treatment for hog cholera but to refer farmers to local practitioners or to the State and Federal veterinarians engaged in this work. To give their public to distinctly understand that they were not veterinarians but willing to be of service wherever possible in counties in which veterinary service is not available. To use care as to diagnosis and treatment, avoid the use of poisonous or otherwise dangerous drugs, and in the absence of accurate diagnosis to do nothing. To attempt no surgery but to refer the farmer to the nearest practitioner.

Following the reading of this paper a few brief remarks were made by Dr. W. W. Webb, Dr. W. A. Downs and others, on the subject. No fault was found as to the position taken by Dr. Burson in the matter. On the other hand it was pointed out that one practitioner in the state had arranged for a county agent to obtain hog cholera virus in the name of the practitioner, thereby enabling the county agent to use the simultaneous treatment.

The coming meeting of the A. V. M. A. at New Orleans was brought to the attention of the meeting on several occasions and all were urged to drop business, take their competitors with them, and attend the meeting. Many present signified their intentions to attend.

Under the head of new business, Dr. Burson invited the Association to hold the next annual meeting at the Veterinary

Division, State College of Agriculture, at Athens. The invitation was unanimously accepted by a rising vote.

A committee on resolutions was appointed to draft resolutions of sympathy and condolence on the deaths during the past year of Dr. D. E. Pace and Dr. A. M. Rettig.

Officers for the following year elected were: President, Dr. H. A. Romine, Montezuma, Ga.; Vice-President, Dr. S. J. Rayfield, Camilla, Ga.; Secretary-Treasurer, Dr. W. M. Howell, Valdosta, Ga.

Following adjournment an interesting clinic was held at the hospital of Dr. J. C. Schwencke. A number of interesting cases were examined. Two pigs were "posted" for diagnostic purposes and numerous forms of parasitism found. Treatment for sterility in cattle was demonstrated by Dr. Schwencke.

All in all it was the best meeting ever held by the Georgia State Veterinary Association.

W. M. BURSON,
Res. Sec^r. for Georgia.

NORTH-WESTERN ILLINOIS AND SOUTH-WESTERN WISCONSIN VETERINARY MEDICAL ASSOCIATION.

The first annual meeting of this association was held at Freeport, Illinois, October 8th and 9th, 1919, at which a very interesting program was presented.

The meeting was called to order by President B. F. Swingley, Freeport, Ill., after which Mayor Calkins, of Freeport, delivered an address of welcome, which was responded to by Thos. P. Brankin.

Then followed the President's Address; the Report of the Secretary-Treasurer, Roy E. Kluck, Forreston, Ill., and the reports of the various committees.

Among the papers presented and discussed were, Sterility of Cattle and Its Treatment, by J. G. Jones, Oregon, Ill.; Metritis in the Cow, by I. W. Perry, Warren, Ill.; My Conceptions of what the Relations between the Veterinarian and the Farm Adviser should be, by G. F. Baumeister, Farm Adviser of Stephenson County Farm Bureau, Freeport, Ill.; Hemorrhagic Septicemia of Cattle, the Different Forms I have met, and the Results I have obtained, by Roy E. Kluck, W. H. Parkinson,

Mount Carroll, Ill., and T. E. Lotz, Chadwick, Ill.; Some Useful Veterinary Medicines, by N. S. Mayo, Chicago.

Heat Prostration, by J. D. Corson, Leaf River, Ill.; Eversion of the Uterus, by Dr. Heer, Platteville, Wis.; Mixed Bacterial Infections—Treatment and Prevention, by E. K. Glover, Kansas City, Mo.

Case Reports on Mixed Infection in Swine and Discussions, by F. D. Yeager, Lena, Ill., W. P. Stattler, Lanark, Ill., C. R. Rosenstiel, Freeport, Ill., C. W. Swingley, Freeport, Ill., and H. E. Erickson, Milledgeville, Ill.

An instructive clinic was held at the hospital of Dr. Swingley.

A banquet was held on the evening of the 8th, and among the speakers were Col. L. A. Merrillat, Drs. N. S. Mayo, and E. K. Glover, and others.

SOUTHEASTERN MICHIGAN VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meeting of the Association convened at the Griswold Hotel, Detroit, Wednesday afternoon, October 8, 1919, with twenty members and visiting veterinarians in attendance.

The afternoon session was devoted to a round-table discussion of various topics. Among these was the sale of goat meat for mutton in Detroit, which had recently received quite an airing in the newspapers. Dr. H. E. States, Chief Veterinarian of the Detroit Board of Health, stated that there was no municipal ordinance under which the sellers of goat meat could be prosecuted, so long as the meat was properly inspected and was in good condition.

The subject of live stock insurance was thoroughly discussed, and it seemed to be the opinion that insurance of this kind was a good thing, provided the company was reliable. It also appeared to be the opinion of those present that it was perfectly proper for a veterinarian to connect himself with such companies in a professional capacity.

An outbreak of stock yards pneumonia was reported, and Dr. Dunphy, State Veterinarian, was asked to explain the position of the state sanitary officials with reference to quarantining

cattle affected with the disease, or preventing the shipment of affected cattle into the State. Dr. Dunphy explained that it had not been found practical to do this, owing to the fact that animals rarely showed any signs of the disease until after they had reached their destination and been unloaded.

Dr. Dunphy was also asked to explain the system of reimbursement of owners of cattle destroyed for tuberculosis, in connection with the Federal tuberculosis-free accredited herd plan, where both the State and Federal Governments provided for compensation. It was shown that owners frequently received practically full value for pure-bred animals.

An outbreak of hog cholera was reported, in which part of a healthy herd of hogs, in uninfected territory, had been given the serum-virus treatment. Cholera appeared shortly afterwards among the hogs which had not been vaccinated, practically all of them contracting the disease. It was a splendid example of the inadvisability of using virus in a healthy herd unless the entire herd is immunized. This outbreak was especially unfortunate because this particular herd was the only herd in the neighborhood to be vaccinated, and the first one to be attacked with cholera.

Adjournment for supper took place at 6:30 and the meeting was reconvened at 7:30 p. m., for the reading of papers.

Dr. R. P. Lyman, of East Lansing, read a paper entitled "Septic Infections of New-born Animals." This was a very scholarly paper and gave the latest views on the pathology and bacteriology of white scours, calf pneumonia, arthritis, omphalophlebitis, etc. The author paid special attention to the treatment of these diseases, hygienic, medicinal and biological. Reasons for the success and failure of different bacterins and serums were recounted.

Dr. R. H. Wilson, of Rochester, presented an interesting paper on "Thrombosis and Embolism." After going very thoroughly into the pathology of these conditions, the author presented a number of case reports, with autopsy findings. This paper was followed by a report, by Dr. S. Brenton, of Detroit, of the successful treatment of a case of embolism of the iliac artery. The subject, a hunter, had been examined by Dr. Brenton and a diagnosis of embolism made. This was confirmed by Dr. R. W. McCully, who was called from New York City to

Detroit, in consultation. The case was regarded as incurable, but the owner insisted that the horse be given a chance to live, and Dr. Brenton was asked to do anything that might be done for the animal. Treatment was started by bleeding the patient from the jugular, about two liters of blood. Then an intravenous injection was given consisting of about four liters of physiological salt solution containing 6 mils of formalin. This treatment was repeated once each week for six or seven weeks. Marked improvement was noted, and apparently a complete recovery was made. The animal is alive and shows no symptoms of the former trouble, even when subjected to the rather violent exercise incident to hunting.

Dr. T. F. Krey, of Detroit, then read a paper on "Tetanus." The author paid special attention to the use of tetanus antitoxin, having made a special study of the dosage and method of administration employed by veterinarians who were extensive users of antitoxin. Dr. Krey laid special emphasis on the importance of the early administration of large doses, rather than to string out the injections of the same amount of serum over a number of days. He also spoke of the good results being obtained with the intraspinal injections of serum, explaining in detail just how these should be made.

Dr. L. A. Maze, of Pontiac, addressed the meeting on the subject of "Autogenous Vaccines in the Treatment of Bovine Mastitis." Stock bacterins used by Dr. Maze had failed to give satisfactory results, so he prepared a vaccine from the udder secretions of each case. Directions for preparing these vaccines were given. Some cases appeared to respond satisfactorily to this treatment, while others were not benefited.

All the papers were very thoroughly discussed, and the members present voted the meeting the best one ever held by the Association.

H. PRESTON HOSKINS, Sec.

FIRST TUBERCULOSIS-ERADICATION CONFERENCE.

The conference, called by the Federal Bureau of Animal Industry to meet at Chicago, October 6 to 8 to discuss the problem of tuberculosis eradication was the first of its kind, and 158 delegates from various parts of the country were

in attendance. In opening the meeting Dr. John R. Mohler, chief of the bureau, emphasized the importance of conducting disease eradication in a manner that is practical and workable as well as being scientifically correct. Likewise he announced the desire of the Federal Government to receive information from all sources to supplement the work of the U. S. Department of Agriculture investigators. A problem of considerable importance is the tuberculin testing of cattle at public stock yards. Such testing is aimed to check traffic in diseased animals and to protect communities which have little bovine tuberculosis from infection by cattle that are diseased or of doubtful health. This condition applies especially to dairy stock and to breeding cattle, but in preventing interstate movement of tuberculous animals, live-stock sanitary officials recognize the need for doing the work in the most expeditious manner.

In addition to the subcutaneous test, which has been the most widely used in detecting tuberculosis in live stock, two other tests—the intradermal and ophthalmic—received close study and discussion. The intradermal test, in the experience of many of the delegates, is especially useful in testing range cattle and those which are unaccustomed to handling. It has a field of usefulness, likewise, in very hot or very cold weather when the atmospheric temperature makes difficult an accurate diagnosis with the subcutaneous test, which depends on a series of animal-temperature readings.

The ophthalmic, or eye test, is another means of diagnosing tuberculosis. This test is applied to one eye, the other being left untreated for comparison, and a characteristic appearance indicates whether the disease is present. The eye test thus far has been used chiefly in combination with the other tests or as a means of obtaining further evidence on suspicious cases. The discussion indicated the usefulness of all three tests in detecting tuberculosis in live stock, and when used in combination the tests appear to be an almost unfailing means of diagnosing the disease. As a supplement to the conference, experimental testing by the three methods was conducted at the Union Stockyards.

Delegates from all parts of the country reported keen interest in their localities in the so-called accredited-herd plan, under which the Federal and State authorities grant a certificate to owners of herds found to be free from tuberculosis and which

are maintained in a prescribed manner. The principle of the plan was warmly endorsed as a constructive means of tuberculosis eradication, and the conference favored its continuance along present lines or with additional requirements that will increase its effectiveness. A topic receiving special emphasis was the need for painstaking and thorough disinfection of premises where disease has been found, followed by continuous attention to sanitation of buildings and surroundings.

Eradicating tuberculosis from cattle will practically solve the problem of controlling the disease among swine. That was the opinion of veterinary experts experienced in the handling and postmortem examination of swine received at the principal market centers. By means of a simple and practical marker, hogs may be tattooed with distinguishing letters and figures, and when disease is found by postmortem examination, the identity of such animals is known. With a simple system of records it is thus possible to trace a shipment to the farm from which it came and stamp out infectious diseases at their source. The evidence submitted showed that swine became infected with tuberculosis, principally from cattle, either by following them in feed lots or pastures, by receiving infected dairy by-products or by eating tuberculous carcasses. In addition there are numerous other but less common methods by which swine contract tuberculosis.

The discussions revealed a wide difference of conditions and problems, many of them intricate, but there was unanimous agreement on the main topic—to eradicate tuberculosis from live stock throughout the United States and to do it at the earliest possible time. Farmers and stockmen of the country virtually have set a pace in their demands for testing that is faster than was anticipated a few years ago, but the live-stock sanitary officials are not to be outdone. The Federal Bureau of Animal Industry is now producing about three times as much tuberculin as a year ago, and it is being distributed free to Federal, State, county and municipal officials. Those in charge of the work in different States recognized that the present progress is but a beginning, and to avoid confusion there must be uniform policies and methods. They stressed also the importance of doing the work thoroughly and well, so there will be no reaction and loss of confidence.

Live-stock owners may be of great immediate assistance in the work, with much benefit to themselves, if they will isolate all

animals brought into their herds until such animals are definitely known to be healthy, and also will maintain clean and sanitary surroundings. The gradual increase in the number of live stock in the United States and also in the shipment and exchange of animals make disease control and eradication a problem demanding the closest coöperation among live-stock owners, sanitary officials and the public in general. The regulations which have been found necessary are directed, the conference showed, at a small minority of conscienceless people who, if unchecked, would spread disease all over the country. In addition many of the provisions regarding handling of live stock in interstate traffic are a check on carelessness or indifference to public welfare. It is believed that the great majority of live-stock men, knowing these facts, will support regulations which are aimed to correct the conditions.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

OCTOBER MEETING, 1919.

The regular monthly meeting of the V. M. A. of New York City was held in the lecture room of Carnegie Laboratory, 338 East 26th Street, Wednesday evening, October 1st, at 8:30 p. m., President Cochran presiding. The minutes of the June meeting were read and approved. Dean Hoskins read an interesting and profitable paper on "America's danger in the new world battle for food." The Dean reviewed the appalling destitution which had accompanied the war, and the remaining hunger problem which is facing the world today, which promises to remain permanent, due to the wasteful neglect of the proper development of the source of food supply in our own country. As a remedy the Dean offered two suggestions. First: that Community abattoirs and food conservation stations should be established. Second: that the exportation of food products should be restricted, so that the price levels in this country will fall within the reach of the average family. The application of these principles would reduce the price of meat 25% in addition to multiplying greatly the supply of other foods whose productivity depends so largely upon animal industry. The Dean's paper was followed by an animated discussion.

Reports of Delegates to the New York State Meeting—Dr. Gannet reported on the obscure case of colic exhibited at the meeting. History: persistent pains, loss of appetite, no temperature, died on tenth day. Post mortem: infected caecum peritonitis and a rupture of the cecal valve. Quittor operated on by Dr. Frost, did well for three weeks, then pus and severe lameness developed; put on table and after re-operation made good recovery. Umbilical hernia case operated on by Dr. Frost did not do very well but a re-operation was very successful. Drs. Slawson, McKinney and Berns discussed these cases. Dr. Eichhorn, reporting on the trip to the Lederle Antitoxin Laboratories, Pearl River, New York, said it was always a pleasure to have veterinarians shown through the establishment. The Doctor also commented on, and explained, the dilution method in inoculating animals against rabies. Under this method only six injections are necessary, two on first day and one on each four following days, the cost being six dollars for the treatment.

Dr. Ellis reporting for the committee on the twenty-fifth anniversary reunion said they had decided on Thursday, October 23rd, 8 p. m. Place of meeting was not settled yet, but it had been arranged to divide the cost pro rata on the attendance at the dinner. On case reports, Dr. McKinney reported that he had a number of horses lately suffering from cramp in the hind legs following shipping fever and influenza. In his opinion this was due to inflammation of the sciatic nerve and treated them with hot applications, liniment and purge, but he had three cases which persisted after three weeks of treatment. Dr. Berns in discussing these cases said he believed they were due to a luxation of the patella, Drs. Cochran and Gannet also joining in the discussion. Dr. Ellis reported a similar case in a cow in Brooklyn which he treated successfully by applying a sharp liniment. The following questions were then asked: Why is a slate or dun colored horse always hardy? Why is a horse with a white mane and tail always delicate? Why is a mule-footed horse not subject to corns? Why is a horse with Roman nose always stubborn? Why do mules not breed? Drs. Devine, Cochrane, Ellis and Dean Hoskins with other members joined in discussing these questions.

No further business appearing, the meeting adjourned.

J. ELLIOTT CRAWFORD,
Secretary.

NECROLOGICAL.

DR. CHAS. S. COLSON.

Dr. Chas. S. Colson, a graduate of the McKillip Veterinary College, and an Inspector in the Bureau of Animal Industry, died on July 2, 1919. Dr. Colson joined the American Veterinary Medical Association in 1918.

DR. W. W. PARRISH.

Dr. W. W. Parrish, of Fitzgerald, Georgia, died suddenly at his home, on September 28th, as the result of an attack of apoplexy, at the age of 57 years. Dr. Parrish was a graduate of the Veterinary Department of the Alabama Polytechnic Institute, Auburn, Ala.

DR. HENRY BUCHANAN.

Dr. Henry Buchanan, of Thamesville, Ontario, Canada, died a short time since from internal hemorrhage. Dr. Buchanan was a graduate of the Detroit College of Medicine Veterinary School in the year 1895, and was admitted to membership in the American Veterinary Medical Association in 1916. He was in practice in Thamesville, Ontario.

MR. HARRY COLEMAN MOORE.

Mr. Harry Coleman Moore, late President of the Pitman-Moore Company, Indianapolis, Ind., died on October 6th, 1919, at the age of 45. While not a member of the Veterinary Profession, Mr. Moore was closely affiliated with it through the business of his firm as manufacturers of biologics, and for the past number of years was a regular attendant at the meetings of the A. V. M. A. Mr. Moore was well and favorably known throughout the profession, and was one of the party of prominent Veterinarians who made the trip to Europe in 1914, and was over there at the outbreak of the late war. Many of the

members may recall the active part Mr. Moore played in the successful meeting of the Association held in Indianapolis in 1912, when he seemed to be the leading spirit in the elaborate preparations that were made for the convention in that city.

We feel sure that the many friends in the profession whom Harry Moore made will deplore his premature death, and will join THE JOURNAL in sympathy for those whom he has left to mourn his loss.

FACTS AND FIGURES NEEDED IN LIVE-STOCK INDUSTRY.

Dr. John R. Mohler, chief of the Bureau of Animal Industry, United States Department of Agriculture, told the American Meat Packers' Association in session at Atlantic City that live-stock production and methods of marketing will never have any real stability until more is known about certain basic problems.

"It takes time and costs money to get those facts, but such information will be needed before there can be any real stability in live-stock production and methods of marketing. Only upon a substantial foundation of accurate knowledge is it possible to build enduring plans or policies which will have the respect of the public and become a real public service.

"The protection of public health will always be of paramount interest, but aside from that, perhaps the most important activity which I can commend to your attention is the collection of facts and figures relating to the live-stock industry. Federal Meat inspection has resulted in important information leading to the control of animal diseases. We know, for example, that tuberculosis and hog cholera cause more than one-half of all condemnations in Federally-inspected establishments. We need to know more about the condition of animals slaughtered under local inspection. We need to know the definite relation between the breeding of an animal and the value of different cuts of meat the carcass contains. I refer of course to the need for figures on large numbers of live stock. We need to know more about factors leading to rapid maturity, more about shrinkage, and more about the location of live stock and meat supplies in the country at any given time."— *Weekly News Letter*.

MISCELLANEOUS.

HORSE MEAT IS A FACT.

Much has been said during the past few years regarding the utilization of horse meat for human food. The chief arguments advanced in its favor are that horse meat is nutritious and for many years has been used in Europe; that thousands of light horses for which there is no appreciative market are consuming grass on the range that might better feed cattle and sheep; that beef, mutton and pork are scarce and high in price, and that additional hides are needed to supply leather. Men who oppose these views contend that horse meat is unsightly, unpalatable, will not keep well, and is not actually needed in America, and that the "noble horse" for esthetic and sentimental reasons should not be put to such an undignified use.

For the information of those who have not examined horse meat it may be stated that it is conspicuously dark-red or even brown in color. When exposed to the air it shows a bluish luster, and even turns blackish-red or black. Its fibers are fine, its consistency is firm, and its coverings of fascia are prominent. There is no intermixing of fat in the muscles. The odor is peculiarly sweet, and to some people almost repulsive. Its sweetness is due to the presence of glycogen, which turns to grape sugar. The fat is soft, oily and light-gold to dark-yellow in color, but in well-nourished horses it is whiter and firmer. Bone marrow is wax-yellow, greasy and soft, but becomes firmer in the air.

Horse meat is slowly but surely entering our markets and going abroad. Horses are being slaughtered in a Milwaukee plant, and a market for its sale is doing business in that city. There are similar slaughter houses and markets in other parts of the country. Other new centers for this industry are springing up. It is for the latter reasons that the United States Department of Agriculture has been authorized by Congress to inspect horse meat and horse products. An amendment to the regulations governing meat inspection was passed by Congress on July 24, providing \$100,000 to carry on the work during the fiscal year ending June 30, 1920.

Under this provision every establishment in which horses are slaughtered for the preparation of food products for transporta-

tion or sale in interstate or foreign commerce will be Federally-inspected. The slaughtering of horses, and the preparing and handling of horse meat must be done in establishments separated from those in which other animals are killed and handled. The horses to be slaughtered for meat must be examined and passed by veterinarians, as the animals must be free from a number of specified diseases, and fit for the purpose. The meat must then be conspicuously branded or labeled "horse meat" or "horse meat product," and bear the inscription "U. S. Inspected and Passed by the U. S. Department of Agriculture.—*Breeder's Gazette*.

NEWS FROM THE PHILIPPINE ISLANDS.

Through Dr. Stanton Youngberg, Resident Secretary for the Philippine Islands, Secretary Mayo has received the names of a number of applicants for membership in the A. V. M. A., all duly vouched for. These are: Honorio C. Evangelista, Frederico Jardiniano, Pedro S. Sales, Angel K. Gomez, G. F. Tottman, Segundo Alano, Santiago Montemayor, and Vincente Diaz.

In remarking upon the weather, Dr. Youngberg has the following to say: "Talk about rain, in my twelve years' residence in this country, I have not seen anything like this before. During the past 18 days (letter was dated Manila, August 12, 1919) seven successive typhoons have passed up the east coast of these islands, which have brought us plenty of wind and rain. Seventy inches of rain have fallen during the period mentioned. One day last week $2\frac{1}{2}$ inches fell in an hour. All sorts of rainfall records are being broken. Needless to say everything is flooded, and there is a great deal of suffering among the poor people. If this does not let up pretty soon, guess we will have to swim out.

"Hope my petitions may all get through, as they are a nice lot of fellows." It is to be hoped that our Filipino friends may not suffer materially from their recent excessive "moisture content."

CORNELL UNIVERSITY OFFICIAL PUBLICATION.

Number D., Volume X., of the Cornell Publication is devoted to an interesting Report of the Conference at the N. Y. State Veterinary College, which was held during the Semi-Centennial Celebration of Cornell University in June last. It is nicely illustrated and contains a number of most interesting articles, or papers, concerning veterinary medicine and its growth at Cornell. Among these may be mentioned "Half Century of Veterinary Medicine in Cornell University," by Dr. James Law, which makes most delightful reading from an historical standpoint. Dr. Simon Henry Gage devotes eight pages to a Biography of Dr. James Law, who was the first professor of veterinary science at Cornell, and who may be considered one of the fathers of the science in this country. Dr. Grant S. Hopkins gives "The Establishment and Growth of the New York State Veterinary College."

"The Problems and the Opportunities of the Veterinarian" are ably discussed by Dr. Walter L. Williams. Dean Veranus A. Moore's paper treats of "The Relationship of the Veterinary College to the State;" while "The Administration of the College and Its Needs" is discussed by Dr. Frank H. Miller; and "Buildings and Equipment" by Dr. Howard J. Milks.

As a supplement, the proceedings in connection with the presentation of Dean Moore's Portrait to the University (previously referred to in the pages of THE JOURNAL) is also given. The publication contains over 90 pages, and should form very interesting reading, not only to Cornell men, but to members of the profession in general.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION,
ETC., REQUIRED BY THE ACT OF AUGUST 24, 1912, OF THE
JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSO-
CIATION (FORMERLY THE AMERICAN VETERINARY RE-
VIEW), FOR OCTOBER, 1919.

Editor—W. H. Dalrymple, Baton Rouge, La.

Managing Editor—None.

Business Manager—W. H. Dalrymple, Baton Rouge, La.

Publisher—American Veterinary Medical Association.

Owners—(If a corporation, give its name and the names and addresses of stockholders holding 1 per cent or more of the total amount of stock; if not a corporation, give names and addresses of individual owners): American Veterinary Medical Association. A non-stock Association. Officers: President, V. A. Moore, Ithaca, N. Y.; Secretary, N. S. Mayo, Chicago, Ill.; Treasurer, M. Jacob, Knoxville, Tenn.

Known bondholders, mortgagees and other security-holders, holding 1 per cent or more of total amount of bonds, mortgages or other securities—None.

W. H. DALRYMPLE, Editor.

Sworn to and subscribed before me this 2nd day of October, 1919.

SAMUEL G. LAYCOCK, Notary Public.

(SEAL)

(My commission expires March 4, 1922.)

**JOURNAL
OF THE
American Veterinary Medical Association**

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n)

W. H. DALRYMPLE, Editor. **BATON ROUGE, LA.**

C. A. CARY, President, Auburn, Ala. N. S. MAYO, Secretary, Chicago.
M. JACOB Treasurer, Knoxville, Tenn.

Executive Board

GEO. HILTON, 1st District; T. E. MUNCE, 2nd District; S. E. BENNETT, 3rd
District; J. R. MOHLER, 4th District; C. H. STANGE, 5th District; R. A.
ARCHIBALD, 6th District; A. T. KINSLEY, Member at Large.

Sub-Committee on Journal

J. R. MOHLER **GEO. HILTON** **R. A. ARCHIBALD**

The American Veterinary Medical Association is not responsible for views or statements published in the JOURNAL, outside of its own authorized actions.

Reprints should be ordered in advance. A circular of prices will be sent upon application.

VOL. LVI, N. S. VOL. 9

DECEMBER, 1919

No. 3

A CHANGE.

At the time of writing this article, or announcement, which is previous to the annual meeting of the Association, it is not possible to say who the next editor of THE JOURNAL may be, although a change is certain. When the present incumbent of the office was elected at the Philadelphia meeting last year, the war was still going on, and many of our ablest members were called to the service, including the previous editor, Dr. P. A. Fish, whose resignation was a decided loss to our publication. And while he considered it a very high compliment and honor to be chosen to succeed Dr. Fish, he consented to accept the position during the unsettled times occasioned by the war, but with the hope and expectation that in a year or so, or after hostilities had ceased, some other member would be elected to the office and be in a position to devote more of his time to the work of THE JOURNAL, which is very much needed.

With a full program of regular duties, besides numerous other calls upon his time, the present editor realized at the time, that in assuming the editorship of THE JOURNAL, which includes the business management, he was undertaking, with limited office help, a very responsible and more or less difficult task. How-